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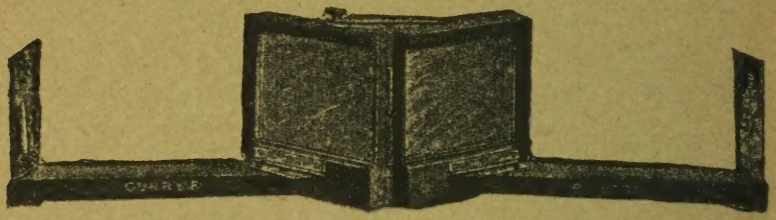

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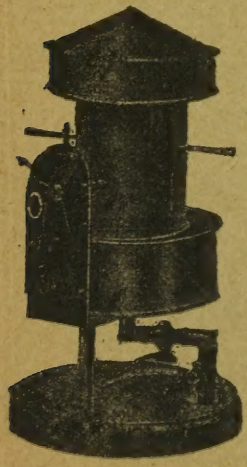

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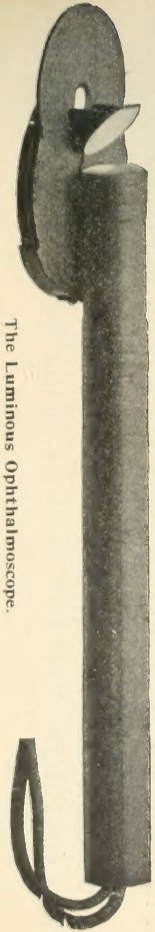

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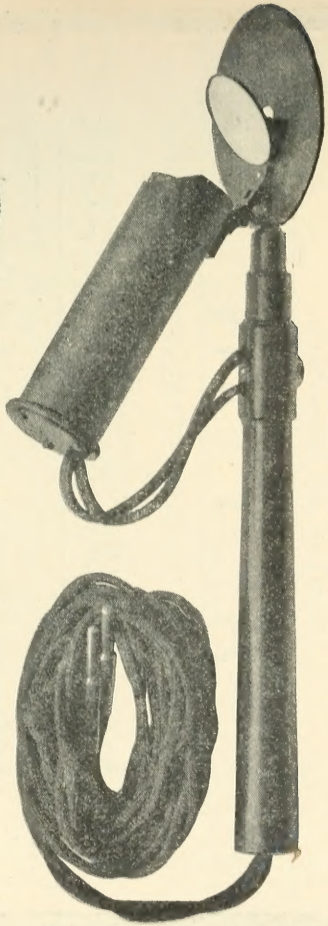

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EXTRACTION OF SENILE CATARACT.

BY

SIR ANDERSON CRITCHETT, C.V.O., M.A., F.R.C.S.E.,

SURGEON-OCULIST TO HIS MAJESTY THE KING;
CONSULTING OPHTHALMIC SURGEON TO ST. MARY'S HOSPITAL, LONDON.

When the Editor of THE OPHTHALMOSCOPE honoured me with a request that I would place on record some of my personal experiences in connection with this operation, my memory at once dived deeply into the past, and I was able to recall the first occasion when I saw a cataract removed.

It was at Moorfields Hospital, and the operator was Mr. Bowman. He made a large conjunctival flap with a

Sichel's knife, involving fully half of the cornea, and although I was only twelve years of age, I recognized with blended fear and admiration the wonderful manipulative skill which caused the cataract to emerge so gracefully from its resting place. I also remember that the surgical proceeding I had witnessed interfered somewhat seriously with my appetite for dinner.

I was, however, more fascinated than dismayed, and during successive holidays from school and college, I was in fairly constant attendance at the Hospital.

I was thus able to note the changes of procedure from the flap operation to Schuft's method, where spoons were used to extract the lens, that favoured by Mr. Bowman being reminiscent of the prow of an Indian canoe, while my father's bore more resemblance to a shallow slipper.

Later on, the needle knife of von Graefe vanquished all rivals, and remains to this day in undisputed possession. I have often been asked by young ophthalmic surgeons to describe minutely the operations of Sir William Bowman and my father, and I have done my best to satisfy their desire; but it is almost impossible to convey to others one's own vivid impressions of personal characteristics.

I have realised this when I hear old men vainly endeavour to recall the effect produced on them by some great orator or actor, who had fired their young enthusiasm in bygone days. I may, however, venture to say this : the two eminent ophthalmic surgeons differed somewhat in temperament, Sir William Bowman possessing an essentially philosophic mind, with calm, cool judgment, and these qualities were reflected in his operative methods, for he seemed to make his hands carefully accomplish the deliberate and matured plans which had been wrought in his brain. My father, although unrivalled for steadiness in manipulation, possessed, in my opinion, rather more freedom both of wrist and fingers, and evinced perhaps more readiness to make bold trial of new plans. In their results they seemed to achieve an equal measure of success, and when we remember that they worked before the days of antiseptics and cocaine, that in cataract operations they had to choose between the risks of a restive patient without anæsthetic and the dangers involved in the latter from violent sickness; the splendid work which they accomplished may indeed excite our wonder and our admiration. Throughout their hospital career they attracted to the operating theatre at Moorfields such distinguished visitors as von Graefe, Donders, Snellen, Agnew, Horner, Hansen-Grut, Knapp, and Liebreich ; and whenever I feel inclined in my own person to regret the flight of years I am consoled by the reflection that if

I were younger I should not have seen these two great English operators while they were yet in their prime. In 1867 I accompanied my father to the International Ophthalmic Congress held in Paris. I was then a medical student at Cambridge University and I remember the mingled awe and delight which I experienced when my father presented me to the President—von Graefe, and said that he, as a toil-worn veteran, was venturing to introduce to his colleagues a young untried recruit.

It was, indeed, a memorable Congress, for amongst the Honorary Presidents who supported von Graefe were Sichel père, Giraud-Toulon, and Liebreich, of Paris, Arlt, of Vienna, the elder Pagenstecher, of Wiesbaden, Warlomont, of Brussels, Delgado-Jugo, of Madrid, George Critchett, of London, and that light-shedding genius, Helmholtz.

The Honorary Secretaries were Meyer and de Wecker, of Paris. Till a few days ago the latter well-known ophthalmic surgeon still survived, almost the last of the Old Guard. And now, to our regret, he has passed to join those noble comrades who have gone before; but whose memory is eternally enshrined in that great brain-built temple of ophthalmology which the last sixty years have reared.

At the Congress there was a discussion on cataract extraction, in which many members expressed their views and related their experiences, and at the finish the witty Dr. Warlomont summed up the situation by saying that everyone seemed to be performing Graefe's operation with his own special modifications, and that, *plus* the latter, each one considered it to be the best operation in the world. The method advocated by my father was to make the puncture and counter-puncture in the cornea, and to complete the section with a small conjunctival flap; and this is, I believe, the form of operation most generally in use in Great Britain at the present time. At the desire of von Graefe, my father demonstrated his method at Dr. de Wecker's *clinique*, before a distinguished assembly of his colleagues. He operated on both eyes without an anæsthetic, and, to my dismay, I was called forward to assist him. In one sense I was, fortunately, able to do this, for the patient was a highly nervous German woman, and as I at that time spoke her language fluently, I calmed and encouraged her in her native tongue.

All went well, and my father was rewarded by receiving a kiss on each cheek from the President. On the same morning I saw the elder Pagenstecher remove a cataract in its capsule. He made a large section downwards with a Graefe's knife, emerging at the cornea-scleral junction, and performed iridectomy. He then introduced a spoon, exactly resembling a modern coffee

spoon in miniature, and most skilfully accomplished his purpose without rupturing the hyaloid membrane. The operation has always been too difficult of performance and has apparently involved too serious risks to claim many adherents, but, with modifications, it was advocated by Mr. Macnamara and by the late Dr. Andrew, of Shrewsbury, the former operating by a lateral incision, without iridectomy, introduced a spoon through the previously dilated pupil, and, depressing the proximate edge of the lens, turned the latter over with his spoon and removed it in its capsule. Dr. Andrew followed an almost similar plan; but before using the spoon he inserted a small wire hook to free the lens from its attachments. Quite recently the operation has been revived by Major Henry Smith (*Archives of Ophthalmology*, November, 1905*), who accomplished the removal of the cataract in its capsule by the simultaneous use of a small spoon and a strabismus hook; the latter being used to express the lens from below. His statistics show that in his hands the operation has proved very successful.

Early in the seventies a new plan of simple extraction was initiated by Dr. Lebrun, of Brussels. He made his incision entirely in the cornea, the insertion of the needle-knife being opposite to the centre of the pupil, the line of section lying nearly midway between that point and the corneo-scleral margin.

Iridectomy was not used, but after the emergence of the cataract, eserine was employed to induce myosis and to prevent anterior synechia.

The operation was almost invariably performed without an anæsthetic, and the advantages of making an upper or a lower section were respectively advanced by rival advocates. The chief attraction offered by this operation was that it was easy of performance, an advantage which also applies to the very similar method long in use at Leeds, which was fully described by Mr. Pridgin Teale in his Bowman lecture of 1893.

My father gave Lebrun's operation a somewhat extended trial both at Moorfields and in his private practice, but he found that it was too often accompanied by both anterior and posterior synechia, and not infrequently by prolapse of the iris.

He therefore discontinued it, and returned to the combined operation, which he never afterwards abandoned. I may here make passing allusion to the ingenious but too complicated operation of Dr. Bell Taylor, of Nottingham, in which he removed only a sufficient portion of the peripheral margin of the iris to permit the egress of the cataract, and I would also refer to the methods of irrigating the anterior chamber introduced by McKeown, of Belfast, and

*For abstract see p. 151 of the present number of THE OPHTHALMOSCOPE.

Professor Panas, of Paris. No International Congress took place between 1872 and 1888, but in the latter year one was held at Heidelberg, and a very interesting discussion on cataract extraction was most ably opened by the late Prof. Gayet, of Lyons, who advocated simple extraction and quoted excellent results. He was supported by Dr. Knapp, Dr. de Wecker, and several others. I waited in the hope that some more doughty champion would rise to speak on behalf of the combined operation, but at length, as no one took up the challenge, I ventured to essay that task. The arguments I used are doubtless already time-worn, and I will not attempt to repeat them here ; but I concluded with a personal appeal, which was, I think, a perfectly justifiable test. I reminded my distinguished colleagues that a time might possibly come to any of us when the operator must change his place, and become the operatee ; and I asked them to answer conscientiously whether, under these circumstances, they would select on their own behalf an operator who, by a simple extraction, might produce a finer cosmetic, and possibly, though by no means certainly, a better optical result, but who must steer them past the dangerous quicksands of prolapse and synechia, or whether they would not rather entrust themselves to the man who strove to secure the largest measure of useful vision for the greatest number, and who pinned his faith to extraction with iridectomy. I think I am justified in the belief that the majority favoured the view which I advocated ; and on the next day the account of the splendid results of the combined operation in his hands given by Prof. Graefe, of Halle, were received with enthusiasm.

In the following year there was a similar discussion at Leeds in the Ophthalmic Section of the British Medical Association, and the general consensus of feeling was undoubtedly favourable to extraction with iridectomy. I have been much interested in the symposium* upon cataract extraction which has recently been published in *La Clinique Ophtalmologique*, and I propose to conclude this short paper by briefly recording my method of procedure. Like Dr. Hess, I operate on any patient whose sight is too defective to allow him to follow his usual occupation, without considering that question of "ripeness" which in former days was deemed such an important element, but if I anticipate that there will be much soft cortical substance to evacuate I prefer to perform a preliminary iridectomy and to wait for five or six weeks before I remove the lens. A few years ago in the first fervour of antiseptic enthusiasm I had the eye frequently washed with bichloride solution, and on one occasion at St. Mary's Hospital I found that a well-meaning but misguided

* See p. 131 of the present number of THE OPHTHALMOSCOPE.

house-surgeon had used it for the baptism of all my instruments with disastrous results. Later on I employed a solution of chinosol, 1 in 6,000, and I still use it for the final immersion of my hands before operating; but since I learned the excellent results obtained by Dr. McGillivray, of Dundee, with simple warm saline applications I have used only the last-named, the lids being everted and the eye thoroughly irrigated. I have every reason to be well satisfied with this plan.

For more than twenty years I have operated without a speculum, for I regard the latter as unnecessary, and, under certain conditions, actually harmful, since the wings of the speculum afford a powerful leverage for the strong spasmodic effort which has so often ruptured a delicate hyaloid membrane, and wrecked an otherwise promising operation.

When I have the advantage of an experienced assistant, I utilise his fingers for holding the lids gently apart; and I may here mention in parenthesis that both my assistant and I preface the operation by most careful and prolonged cleansing of the hands, and especially the nails, with hot water and soap, and all my instruments are sterilized in boiling water.

When I have to rely entirely on my own resources I operate by a method which I described in "The Lancet," in May, 1886. After it has been rendered anæsthetic, the eye is steadied with short forceps held between the thumb and the two first fingers, whilst the ring finger is used to elevate the upper lid to such an extent as will enable the operator to make the required section.

The sensitive natural speculum possesses this great advantage that it can recognize the beginning of a spasmodic effort on the part of the patient, and can at once give the necessary relaxation, and as the section is nearing its completion, the gradual withdrawal of the finger allows the lids to close gently and without effort. The knife which I use differs somewhat from Graefe's original pattern. The blade begins to broaden immediately below the point, which is central. The back of the knife is bevelled and the blade is slightly rounded; it does not permit a too rapid escape of aqueous. The shape facilitates the accomplishment of a smooth and rapid section, and the iris is less likely to fall in front of the knife than is the case with more attenuated blades. I make my section at the corneo-scleral margin with a small conjunctival flap, and although I complete three-fourths of the section with the first onward and upward movement, I am always careful to finish it as gently and slowly as possible. I still adhere to the principles of eclecticism which I advocated in a lecture delivered at St. Mary's Hospital in 1883. Thus, in a much enfeebled patient, or in one suffering from diabetes, I should refrain from making my section entirely in the cornea,

and in cases of immature cataract I usually make a peripheral rather than a central incision in the capsule. If a lens be quite mature I usually evacuate it with a tortoiseshell spatula, but should there be much soft cortex I prefer to use my finger and the lower lid, and I persevere till no gray cloud can be seen in the pupil. The glutinous and adhesive lens is that which needs the most careful manipulation, and I often find that this type of cataract can be more safely and easily coaxed to emerge by a gently applied rotatory movement with the finger than by any direct pressure.

I use a dry dressing with light bandage and I protect the eye with the admirable Cartella eye shield, recommended by Mr. Priestley Smith. I begin to use atropin once or twice daily at the end of forty-eight hours, but if there be no pain or swelling of the lids, and no rise of temperature, I am only too content to leave nature undisturbed to accomplish the healing process, and I do not examine the operated eye till the fifth day.

I may venture to claim a rather exceptional experience in the after-treatment of eye-operations, for it includes a large share of my father's practice, in addition to my own, and I am well assured that serious harm results in not a few instances from too early and too eager interference. In the matter of darkening the room I am chiefly guided by the wishes and feelings of my patient. I, as a rule, give a mild narcotic for the first two nights following the operation, to neutralise the restlessness which is usually present.

In glancing through these random reminiscences I recognize with regret that the personal factor is unduly dominant. I can only plead that under the conditions imposed upon me by the editorial request, this was inevitable and unavoidable, but it will not, I trust, be found altogether unpardonable.

I have ventured to write them in the modest hope that they may perhaps possess some slight interest for my colleagues of a younger generation.

EXTRACTION OF CATARACT IN THE CAPSULE.

BY

H. HERBERT, F.R.C.S.

MAJOR, INDIAN MEDICAL SERVICE,
BOMBAY, INDIA.

One is bound to admire Major Henry Smith's cataract work at Jullundur,[1] the enormous number of successful cases, and the benefit conferred upon many people. His name should

[1] For abstract see p. 151 of the present number of THE OPHTHALMOSCOPE.

be permanently associated with the operation of extraction of the lens in its capsule, because of his having shown (1) the surprisingly slow rate to which the escapes of vitreous may be reduced in the operation, and (2) the noteworthy freedom from iritis as a complication. Ophthalmic surgeons in general, who never perform extraction in the capsule as a routine operation, must admit that it is probably the correct procedure under the conditions obtaining in the Punjab. There the operator attains to an extraordinary degree of skill,[2] while the pressing demands upon his time and upon the hospital accommodation necessitate an operation which is quickly performed, followed by rapid recovery, and which gives at once a final and satisfactory result. Now, however, the Jullundur practice is being followed elsewhere in India by junior surgeons. One of the latter, Capt. Oxley, writes in the *Indian Medical Gazette*[1] for December, 1905, recommending extraction in the capsule even to beginners, although Major Smith considers it "not an operation for the inexperienced."

Under the circumstances it appears advisable to re-state and to re-examine the fundamental objections to the operation as a routine method of treatment. The operation violates the essential conservatism of correct surgery in that it introduces a risk unnecessarily, *i.e.*, for the sake of advantages which can be obtained without risk. We are told that escape of vitreous, which we all fear, occurs under skilled hands, but slightly oftener than in ordinary extraction, and that the quantity lost is nearly always small, and that the accident is therefore negligible. Major Smith's percentage of escapes, between 6 and 7 per cent. given in 1903, and again in 1905, probably closely approximates to the lowest attainable by this method of operating. Capt. Oxley's figures — 12 losses in 40 operations — are perhaps a fair index of what the beginner must expect. How do these rates compare with those of ordinary extraction? At the Cowasjee Jehangir Ophthalmic Hospital, Bombay, in the year from December 1st, 1904, to November 30th, 1905, there were 609 extractions, excluding linears. Of these 35 were performed by downward section, in patients who could not fix their eyes steadily downwards. These are placed apart, because I did not realize until quite lately the advisability of substituting a retractor for the lid-speculum in these operations (at least in all cases with the slightest retraction of fornices from scarring). Through using the speculum in the earlier operations there was an extraordinary

[2] Obviously the question of loss of vitreous depends largely on the behaviour of the patient also. Do the Punjabis exhibit an unusual degree of self-control?

[1] For abstract *see* p. 153 of the present number of THE OPHTHALMOSCOPE

number of vitreous escapes, occurring almost consecutively. Altogether there were 6 losses in the operations. Among the remaining 574 extractions there were 15 escapes, *i.e.*, 2·6%. I think this is about the usual percentage obtained by experienced operators. Six of the fifteen accidents occurred in cases where the lens was expelled in its capsule, either squeezed out by spasm of the orbicularis, or extracted thus because of early escape of vitreous; or because of the lens becoming depressed (once in a diseased eye, with pupillary membrane and very shallow anterior chamber). From five other eyes during the year the lens was intentionally expressed in its (more or less opaque) capsule, without any accident with vitreous. From ten eyes opaque capsule was removed immediately after expulsion of the lens, giving two escapes of vitreous, and once opaque posterior capsule was punctured without accident. There remain but seven vitreous losses, distributed among 552 operations where the capsule was left behind. One of these mishaps was in extracting a lens already dislocated into the anterior chamber. Another occurred in a glaucomatous eye. Two losses are noted as being due to a blunt cystitome pulling tough opaque capsule about instead of cutting it. (Our cystitomes become much blunted through constant sterilizing in the flame of a spirit lamp.) These explanations are given, not with a view of excusing our faults, but with the object of showing what practical benefit may reasonably be expected from the attempt to maintain intact the supporting diaphragm of capsule and zonule. It is thus evident that the lowest attainable percentage of vitreous accident in ordinary extraction is very distinctly lower than in the "complete" operation. In comparing the two operations in inexperienced hands, the difference is likely to be greatly accentuated, judging from Captain Oxley's figures and from my own experience. Not only this, I believe that both the frequency and quantity of loss of vitreous are apt to be a little under-estimated in operations where the capsule is removed. Expulsion of vitreous by spasm of the orbicularis may possibly begin or continue or recur after the eyelids have been closed and after the bandage has been applied, without our knowing of the complication. I can recall two cases in my own practice of late incarceration of firm vitreous in the wound, and one example of the distortion of pupil which is produced by large loss of vitreous.

In examining the visual results of the total 22 eyes from which vitreous was lost, it is noteworthy that three patients were able to see only moving bodies afterwards. Two of these three almost certainly had detachment of the retina. The eyes had

[1] Possibly all three had retinal displacement. Opacity of vitreous very frequently obscures the view of the fundus in these cases.

a satisfactory appearance, but were useless visually. It is a matter of common observation that this result is to be expected either at the time or later in a proportion of the cases where any considerable quantity of vitreous is lost.[5] The absence of any mention of loss of sight from this cause in the Jullundur reports certainly would appear to weaken the whole of the statistics of results, necessarily based mainly upon hospital assistants' tests and records.

In our Bombay operations there is a definite percentage of poor and moderate results, due to no fault in the operations, but to pre-existing conditions, such as corneal opacity, occluded pupil, glaucoma, or fundus disease.[6] It is sometimes very difficult to decide to what extent previous disease of the eye is responsible for a poor result. Under the circumstances anything approaching 99·27% "first class results," as obtained with simple spherical lenses at Jullundur, is absolutely impossible. And classification by visual result alone, without qualification, becomes meaningless and possibly misleading. The visual acuteness obtained at the C.J. Ophthalmic Hospital from extraction of lens and capsule (either the lens in its capsule or the lens and opaque capsule separately) without loss of vitreous, has never been appreciably better than that of the general average of ordinary extractions, as tested at the time of discharge from hospital, usually nine or ten days after operation. Simple spherical lenses are used, and test-dots corresponding with Snellen's types. The patients' pupils at the time are always more or less dilated from the atropine used in the routine after-treatment. The last fifty cases gave these results :—2 cases $\frac{6}{20}$, 5 cases $\frac{6}{30}$, 14 cases 40, 16 cases 60, 12 cases fingers at various distances, 1 case moving bodies (a glaucomatous eye). The surprisingly low average vision is presumably attributable to astigmatism and dilated pupils. Either the average degree of astigmatism, produced by this operation, must be greater than in ordinary extraction, thus counterbalancing the benefit of the clear pupil, or the effect of early after-cataract upon visual acuteness must be remarkably slight, without saying that the visual field must be often much blurred after ordinary extraction, by opaque capsule, cortex, blood-clot, and lymph, but this is a matter of quite secondary importance.

The superiority of the perfectly clear pupils, as regards visual

[5] We have certainly seen detachment follow operation, although rarely, where no vitreous had been lost, in eyes neither myopic nor obviously unsound previously. We are not prepared therefore to assume that small losses of vitreous are invariably harmless.

One has no right to refuse operation where there appears to be a chance of restoring moderate vision, *e.g.*, in cases where projection of light is impaired, but not greatly so.

acuteness, would be doubtless more evident in comparing later results. This is the main justification of the Jullundur practice. So exceptional is it throughout India for patients to return after discharge from hospital that even in Bombay we have to deal with after-cataract quickly or not at all Patients whose vision appears to be definitely impaired by after-cataract—apart from purely temporary defects due to blood-clot or cortex—are "needled" ten or eleven days after operation and kept in hospital two or three days longer. When properly safeguarded, this appears to be a proceeding quite devoid of risk. A fairly long single cut is made in the opaque membrane, by means of a sharp and very narrow old Graefe's knife introduced through the sclerotic close to the cornea. The scleral puncture is made subconjunctival by sliding the movable ocular conjunctiva, caught on the point of the knife.

My small experience of extraction of the lens and capsule supports Major Smith's statement with regard to the absence of ordinary iritis after this operation. But really troublesome iritis, iritis which defies treatment, is due almost exclusively to infection, and in this respect we are possibly better off in the ordinary operation. It is well recognised that many of the bad results from operations for after-cataract have been attributable to infective organisms which gained entrance through vitreous incarcerated in the corneal wound. Does infection never enter the eye in this way after cataract extraction? In the last Jullundur series of cases there were nine suppurations, three of which apparently occurred among the nine cases reported of large loss of vitreous.

In the Bombay Hospital both suppurations and severe iritis are extremely rare complications. I formerly reported[7] 1,172 extractions with only one suppuration, and no iritis or iridocyclitis "severe enough to have resisted energetic treatment." Since returning from leave I have performed over 800 additional extractions, with the result of no suppuration and only one closed pupil from iritis.

To sum up, not a scrap of evidence has been advanced, or is ever likely to be advanced, sufficient to justify removal of transparent capsule, except under very pressing circumstances. The case as regards the average operator remains precisely as it was before, in spite of Major Smith's excellent work. By ordinary extraction, followed if necessary by needling, quite as good results can be got with distinctly less risk, and at the cost merely of a little more troublesome and protracted after-treatment.

[7] *Practical Details of Cataract Extraction*, 2nd Edition. 1903.

NEEDLING FOR "AFTER-CATARACT" AND ITS ATTENDANT DANGERS.

BY

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To needle the capsule after a successful extraction of the lens for cataract is an operation that is frequently performed, and in a large proportion of cases with gratifying success. It is the fulfilment of the implied, if not expressed, promise on the part of the surgeon, that in undertaking the responsibility of the operation he shall enable the patient to resume, at least to some extent, his ordinary work. Yet, in a certain number of cases, fewer, as a rule, in proportion to the experience of the operator, the result is not that which was anticipated. Events taking place at the time of the operation, such as too small an incision, or a fluid vitreous, or hæmorrhage into the anterior chamber—all circumstances leading to incomplete removal of the cortical substance of the lens—or events following the operation, as proliferation of the cells lining the anterior capsule, or the effusion of the products of inflammation of the iris or of irido-cyclitis, may seriously interfere with vision. The patient feels that his condition has not undergone material improvement. Whilst he can see light, he has difficulty in avoiding large objects, and is quite incapable of recognising friends. In the majority of cases the opacity occluding the light is plainly visible in the pupil; but in some cases, although the pupil looks perfectly black, considerable impairment of vision is the result of a delicate wrinkling of the posterior capsule or membrane of the vitreous, the effect of which is similar to that of corrugated glass, light entering the eye freely, but so distorted that nothing is seen clearly.

In looking back on the results of a fair number of operations, there are few that I regard with stronger feelings of regret than those in which I have been tempted, notwithstanding certain contra-indications, partly by the solicitation of the patient, and partly till taught the contrary by experience, under the belief that the operation was a trifling one, to needle the capsule after a successful removal of the lens. I am the more disposed to think that others have had the same mishaps, when I remember that so practised an operator as Sir William Bowman proposed, with great advantage to the patient, the employment of two needles instead of one; that Mr. Critchett, de Wecker, and others have devised and recommended the use of various scissors, hooks, canula forceps, and the like, to be introduced through a small

opening in the cornea or sclerotic, made with a broad needle. These efforts to minimise danger, we may reasonably conclude, were the outcome of bitter experience. The course of events is usually that the major operation has been performed successfully, and the patient, accustomed to grope his way, finds himself to be no longer dependent on others and can divide his food and go about the ordinary affairs of life, with comparative comfort, and is more than satisfied. After some weeks, or perhaps, if the patient live in the country, some months, he finds he is unable to read or work, or if a woman, to sew or to stitch, and he returns complaining, especially if he have been a literary man, that the operation has not answered his expectations, and, indeed, that we had promised that with glasses he would be able to read or to resume his avocation. If prudent the surgeon cheers him up, points out to him that steady improvement has taken place which is likely to continue, and quotes cases where almost complete transparency in the media has been regained without further interference. He is dismissed, and we heartily trust that our favourable prognostications may be realized. A few months elapse, and although some improvement is admitted to have taken place, yet there is a tone of dissatisfaction which is considerably intensified if he happen to have met and compared notes (as patients are apt to do) with a friend who has successfully gone through the ordeal at the hands of a colleague, and who flauntingly takes his paper from his pocket, adjusts his spectacles, and proceeds on the spot to read a paragraph for the edification of the man of dim sight. Next morning he pays his surgeon a visit, recounts his experience, and almost demands that "something" should be done. Various conditions may be present that suggest delay—the opacity may consist essentially of soft cortical substance, and be obviously clearing up; the patient may have some general affection, such as diabetes, heart disease, or chronic bronchitis, with violent fits of coughing; these may contra-indicate any interference, and again the prudent surgeon counsels postponement of operation and perhaps tries the effect of a drop of atropine solution. At length, wearied out with the repeated solicitations of the patient, he consents to "clear the pupil." In many cases, no doubt, the results are satisfactory, the tense capsule or membrane of the vitreous, to which some remains of the cortical substance are adherent, splits asunder with a touch of the needle, the segments roll back, good vision is at once obtained, scarcely perceptible inflammation follows, and in a week or ten days both patient and surgeon are jubilant. But, unfortunately, there is a dark side to this bright picture. Sometimes, inexplicably, though a clear pupil is left at the time of the needling, effusion of lymph or

inflammatory products takes place, and the improvement (if any) is only slight and temporary, or it may be found that the membrane is so tough that the needle, either owing to the point becoming blunted in traversing the cornea, or to unusual toughness of the capsule, fails to penetrate it; the surgeon is tempted to press with a little more force against it, when suddenly the attached margin of the capsule gives way, and pretty smart hæmorrhage may follow. The impairment of sight is, of course, considerable, and the operator must indeed have command over himself if neither by speech nor act he can persuade the patient that nothing exceptional has occurred. The absorption of the blood is sometimes rapid, but more generally slow, for the eye, it must be remembered (as my lamented colleague, Mr. Vernon, used to say), was originally not healthy, as shown by the supervention of cataract, and its condition is manifestly not improved by the operation for the removal of the lens. Where blood has been effused both operator and patient must, as a rule, look forward to a tedious process of convalescence; and the capsule—and this is an additional annoyance—may be found, after all, to have not materially shifted its position, and, owing to particles of fibrin, leucocytes, and products of inflammatory effusion may be even less transparent than before, and the improvement so much desired has not followed the needling. At this stage the patient sometimes loses confidence in his surgeon, and I have known cases where application has been made to others. Personally, I have always borne in mind a remark, made to me many years ago by the late Mr. Critchett, which has much worldly wisdom in it: "Never, if you can help it," he said, "go into partnership with another man's unsuccessful operation, for you will surely be held responsible for any untoward result." Other conditions that may be set up by needling are acute and chronic iritis and glaucoma, all of which are difficult to treat where they occur after extraction, and even when subdued leave the eye in an unsatisfactory state. I do not propose to consider these affections. I only desire to impress on those who are beginning practice, especially in the country, where one bad result is more discussed than many good ones, that needling is not a trivial operation to be lightly undertaken, but that the conditions present should be carefully considered. Any proceedings that tend to prevent the formation of secondary capsular cataract are of the highest importance in the conduct of the operation of extraction, and are scarcely dwelt upon as fully as they should be in the numerous manuals that are in the hands of students. Hence, the importance of the "toilet of the eye," as it has been termed, after the operation, and great credit must be given to

Mr. Treacher Collins, not only for his numerous and beautifully illustrated contributions to the pathology of the eye, but for the very valuable suggestion in regard to the removal of the anterior capsule in extraction, which were I in practice I should certainly adopt. His mode of procedure is contained in the last number of the *Ophthalmic Hospital Reports*.* This seems to me to be one of the most important improvements in the conduct of the operation since the introduction of the Graefe knife, and I would strongly recommend the study of his communication to all ophthalmic surgeons.

REGARDING THE LOSS OF VITREOUS IN THE OPERATION FOR EXTRACTION OF CATARACT.

BY

E. F. DRAKE-BROCKMAN, F.R.C.S.

The revival of the operation for extraction of cataract in its capsule (formerly known as Pagenstecher's operation) and the remarkably favourable results which have lately been reported by some operators, have led me to look more critically into the subject. I have, therefore, referred to my past record of cases, extending over many years, dealt with in this manner, and have contrasted these results with an equal number of extractions by, firstly, the three millimetre flap operation *with* iridectomy, and, secondly, by the three millimetre flap operation *without* iridectomy. I have taken the cases consecutively as they are recorded in my operation registers, and I find the results are as follows :—

(1) *Pagenstecher's Operation.*

Recoveries...	"Good vision" ...	194	or	66·21 %
	"Fair vision" ...	83	..	28·32 %
Failures ...		16	,,	5·46 %
Total		293		
Loss of Vitreous...		84	,,	28·67 %

(2) 3 *Millimetre Flap Extraction with Iridectomy.*

Recoveries...	"Good vision" ...	191	or	65·18 %
	"Fair vision" ...	84	..	28·65 %
Failures ...		18	..	6·81 %
Total		293		
Loss of vitreous ...		17	,,	5·80 %

(3) 3 *Millimetre Flap Extraction without Iridectomy.*

Recoveries...	"Good vision" ..	220	or	65·08 %
	"Fair vision" ...	60	..	20·81 %
Failures ...		13	,,	4·43 %
Total		293		
Loss of vitreous ...		3	..	1·02 %

* For abstract *see* page 182 of the present number of THE OPHTHALMOSCOPE.

It will be noticed that I performed the first-named operation in 293 cases of cataract, a small number, it may be thought, from which to arrive at a just conclusion as regards its value. The reason for my quoting so small a number is that, after repeated trials of the operation, I found the results so discouraging, when compared with the other two methods, especially as regards the loss of vitreous, I abandoned it in favour of the three millimetre flap operation, either *with* or *without* iridectomy. The high percentage of vitreous loss in the first method of operation might have been due to deficient manipulative dexterity on my part in the expression of the lens, or to other causes. Whatever the cause might have been, I considered the risk of losing the vitreous in so many cases was, more or less, a serious matter as regarded the ultimate results of securing either "good" or "fair" vision, with a promise of *permanency*. For it must be remembered in this connection (1st) that all these were hospital patients; (2nd) that the visual acuity was generally tested within ten days after the operation; and (3rd) that no opportunities, in the majority of cases, offered themselves after a lapse of time for further testing, whether the visual sense continued "good" or "fair," or whether the quality of vision had deteriorated. Some cases, in which loss of the vitreous had occurred in a marked manner, were seen again, after various lapses of time, and distinctly showed further deterioration of sight, amounting, in some cases, to mere perception of light and shade.

I hold, and I believe oculists who have had a wide experience in cataract operations also maintain, that the loss of a *small* quantity of the vitreous body is not of serious importance; but, on the other hand, I as strongly hold that the loss of the vitreous, beyond a certain amount does, as years pass by, cause gradual and marked deterioration of the seeing powers. The perfection of any operation for the removal of cataract, to my mind, consists in securing the smallest disturbance of the structures which are directly concerned in the function of vision, and in order to secure this it is most important to avoid introducing instruments unnecessarily into the eye, to refrain from removal of structures, such as the iris or vitreous body, and not to employ undue pressure on the globe in attempts to remove the lens.

In reviewing the above tables it will be noticed (1) as regards *failures* the highest percentage was experienced in the 3 millimetre flap operation *with* iridectomy, and the smallest percentage in the same operation *without* iridectomy. I therefore almost invariably performed the latter operation, except under special circumstances

(2) As regards the acuteness of vision after operation.

Here again it will be seen that the highest percentage of "good" vision obtained in the 3 millimetre flap operation *without* iridectomy, and the smallest percentage in the 3 millimetre flap operation *with* iridectomy. And here I may mention that I have classified all recoveries of vision ranging from $\frac{6}{6}$ to $\frac{6}{12}$ as "good" vision, and all those ranging from $\frac{6}{18}$ and below as "fair" vision.

(3) In reference to the loss of vitreous, the differences in the percentages are very striking. In the removal of the lens *in its capsule* this accident occurred in 84 out of a total of 293 cases, or in the ratio of 28·67 %; in the three millimetre flap operation *with* iridectomy on 17 occasions, or in the ratio of 5·8 %; and in the three millimetre flap operation *without* iridectomy in three cases, or in the ratio of 1.02 %. I ascribe these differences to the fact that in the first of these operations, in which greater pressure in expressing the lens must be employed, a greater risk of loss of vitreous is involved; that in the second operation, by removal of a segment of the iris, the anterior support to the deeper structures is either weakened or entirely removed; whereas, in the third method, the liability to loss of vitreous is very materially diminished—granting even that more pressure is required—in the endeavours to effect the removal of the lens, than in the second operation.

ON SOME POINTS IN RELATION TO EXTRACTION OF CATARACT.

BY

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The subject of cataract extraction is one which does, and always will, lend itself to discussion. It seems an inexhaustible topic, and one in which there is invariably something to be said both for and against the methods used by different operators. Like some other fascinating pursuits, it is hardly possible to imagine a cataract being removed in such a perfect manner that no improvement could possibly be made upon it. Its discussion, therefore, is of perennial interest, and can never grow really stale. When all surgeons of experience and repute are in agreement as to the best methods of procedure, then, and not till then, will the subject be exhausted.

Considered as a surgical operation, the skill required is perhaps really not so very great, for it chiefly resolves itself into

the operator being able to use his hands with gentleness, and yet at the same time with firmness. He must distinguish a sharp knife from a blunt one before he begins; and it is essential that he should know how to make the knife do its work without the use of force. The unsuccessful operator is one whose hands are heavy, and who has no idea of delicacy of touch. Far rather would I personally trust a gentle operator, whose hand may not be quite steady, than I would one who though he may be as steady as a rock yet knows not what gentleness of touch means. The former will be the successful operator.

Everyone is now so fully convinced as to the necessity of using absolutely sterile instruments, dressings, and lotions, that there is no need to insist upon these points. There is, nevertheless, a weak spot in the procedure, and one which we may well doubt whether it will ever be effectually eliminated. I refer to the practical impossibility of rendering the conjunctival sac absolutely sterile. There is, of course, always a direct communication with the lacrymal sac and the nose, and until we know how to ensure the sterility of these parts as well as of the conjunctival sac itself, it is my belief that occasionally suppuration after an intraocular operation will take place. This untoward accident will serve to remind us, that in spite of all the care and attention we may lavish on external things, there is still one source of error which we have not been able to eliminate. The vastly better results we obtain since we have cut off infection from instruments, etc., show, however, how much we owe to these precautions.

Opinions differ much regarding the best methods of operating, so that it is always interesting to hear the views of other surgeons. In the present communication I shall state what, at the present time, seems to me the method best calculated to yield success in the greater number of cases.

Speaking for myself, I have never yet had the courage to attempt to extract a lens within its capsule, as is so successfully done by Major H. Smith and some few other operators in India, whose experience in a few years would equal or exceed that of many British and Continental surgeons in an entire lifetime. It has, of course, occasionally happened that one has more or less accidentally extracted a lens, capsule and all, and these cases have, as a rule, done well; but this is a very different thing from deliberately attempting to do it in an eye with a healthy and strong suspensory ligament.

To my mind, preliminary iridectomy is, as a rule, superfluous. It subjects the patient to two operations instead of one; and I think that its advantages are more than outweighed by the disadvantages it possesses.

I often wonder whether the merits of extraction with and without iridectomy will ever be settled to the satisfaction of all parties. I very much doubt it. The same uncertainty possibly applies to the merits or demerits of a conjunctival flap. Since it is impossible to be in agreement with everyone, I will simply point out in my further remarks what I consider to be the best way of dealing with cataracts in elderly people who have otherwise healthy eyes.

First of all, a patient must have a cataract in both eyes before I should be induced to extract it from one; and, of course, nobody would think of operating on both eyes at the same sitting. As I observed before, I am speaking of senile cases, for I admit that occasionally one has to do something for a traumatic cataract when the other eye is healthy; but with this exception, nothing would induce me to operate upon one eye so long as useful vision remained in the other. What good may be expected to result if such be done? Usually none, for however successful the operation, and however good the vision obtained, such a person will not be able to use the two eyes together. Nor is the case bettered if glasses be given, inasmuch as the patient is likely to come back with a piece of stamp paper stuck over the other eye, and the statement that he can get on quite well, either without the glasses, or when he covers up the glass which is before the aphakic eye. The only advantage is that he is not quite so blind on the one side as he was before the operation, and this may possibly be useful under certain conditions—such, for example, as when a man is surrounded by machinery and may be caught by it, in motion, if he is unable to see it. Even under those circumstances he is not likely to thank the surgeon for making him wear his glasses.

It is a cause for scientific congratulation that the dread disease, sympathetic ophthalmitis, is not of more frequent occurrence than it is, but what surgeon can afford to ignore it? I excised an eye twelve years ago for fear of this disease, since it had for some months remained inflamed and painful after an unsuccessful extraction. That person to this day sees fairly well with the other eye so little has it been affected with cataract. Might not this patient have been left with two eyes all this time instead of having to run a serious risk of losing both, to say nothing of the inconvenience and danger of three operations, the first two of which were absolutely unnecessary, and it was the performance of these only, which rendered the third urgent and necessary. Within the last year two patients presented themselves to me who were not so fortunate as the one I have just mentioned. In each of them one eye had been operated upon for cataract. In both of them the lens of the other eye was clear when I first

saw them, but both eyes, treated surgically, had done badly. The first one went away with some treatment for a week, but did not again see me for two months "because the other eye had been so painful." By that time the remaining eye was almost as blind as the one which had been operated upon, and the immediate removal of this one, in which now no sight remained, did nothing towards saving the other, which speedily was reduced to the melancholy condition of "No p.l."

The other patient had been operated upon nine months before I saw him, and he came to hospital with keratitis punctata and early sympathetic disease. The eye that had been operated upon was all but blind, and I at once excised it, but the point about the case was that the other lens was *absolutely clear*. After weeks of treatment, the disease subsided, yet it left the vitreous so full of opacities, together with other signs of the severe cyclitis which had been present, that should the lens ever become opaque, I certainly do not envy the surgeon who may be called upon to extract it.

As regards the actual details of operation which I consider the best adapted to give a good result. I like, first of all, to make a good big incision, so that however large the lens is, it may have plenty of room to come away, and, then, I make a large conjunctival flap. While travelling across the anterior chamber, I dip the point of the knife into the lens capsule, then withdraw it, and pass it across to make my counter-puncture. The objection which is sometimes urged against adopting this method is that the aqueous may be lost. Should this happen, it is due to the fact that the blade of the knife is made to cut up at the same time as it was being pushed forwards across the chamber, a thing that should be carefully avoided. With a little practice, aqueous is seldom, if ever, lost at this stage. The great advantage of taking the capsule with the knife is that the point must be sharp, or it could never have got there. A cystitome is by no means always in this state: and then, again, when the incision is being made there is no blood in the anterior chamber, as there often is after a conjunctival flap has been made, and this is still more likely to be the case after the performance of an iridectomy; it is then impossible to see whether the capsule is properly lacerated or not. After this is done, I at once attempt to extract the lens. In the vast majority of cases, the prick of the capsule is quite large enough to allow the pressure of the lens to complete its rupture, and the cataract comes away without difficulty. If the latter can be removed with the iris still intact, the probability of transparent capsule being brought up and left entangled in the wound is greatly lessened. When the iris is swept back, the capsule goes with it and the wound is left free,

while if the incision is sufficiently peripheral to allow of a conjunctival flap, the danger of an adhesion of the iris is reduced to vanishing point. The flap seals the wound, and the anterior chamber is reformed in the course of a comparatively few minutes.

It does not by any means always happen that the iris will go back, and the pupil become circular, after the lens is removed. After several attempts to replace it, the pupil may still remain drawn up. If it does, a piece of the iris should be at once removed. I never think it worth while to risk a prolapse, although however careful one may be, a prolapse is certain to happen occasionally. It is, of course, cut off as soon as it is seen, and, as a rule, no harm results, while if the iridectomy is done at the time of the extraction, and as soon as it is pretty certain it is not going back well, it is no more difficult to do then than it is before the lens is removed. Should the iris go back well, and healing take place normally, these cases undoubtedly give the best results of any, and they have among their group the greater number of eyes seeing 6/6 with their correction, a fact I brought out some years ago when I carefully examined over 1,500 cases.* I freely admit, however, that should iritis or other complication supervene an iridectomy is an advantage; still, with otherwise healthy eyes one does not now expect to get severe iritis, and, if care is taken, it certainly does not often happen.

This is the procedure which I prefer, and I believe it be, on the whole, the safest that can be adopted.

CLINICAL, PATHOLOGICAL, AND THERAPEUTICAL MEMORANDA.

INTRACAPSULAR CATARACT EXTRACTION.†

BY

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In the following four cases I have attempted to extract cataract by the intracapsular method. A large corneal incision was made upwards, following closely the corneo-scleral junction, and the knife carried under the conjunctiva, so as to obtain a conjunctival flap. An iridectomy was made, and then by means of two

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†Synopsis of paper read before the Glasgow Medico-Chirurgical Society on 12th January, 1906.

curettes, the cataract, included in the lens capsule, was delivered in one mass by pressure and counter-pressure in the usual manner.

Case I.—P. M——, male, aged 28 years, was admitted to the Glasgow Eye Infirmary on 24th June, 1904, with cataract. On the 29th June the cataract was removed by the above method without rupturing the lens capsule. The ease with which the lens was delivered was striking—there was no escape of vitreous, and a black pupil was obtained. On the following day the eye was dressed, the wound had healed, and the anterior chamber reformed. Subsequent recovery was uninterrupted. On the 11th July the acuteness of vision was noted as at least $\frac{6}{18}$, but the patient was illiterate, and further examination with the ophthalmoscope revealed old choroidal mischief.

Case II.—M. S——, female, aged 65 years, was admitted to the Glasgow Eye Infirmary on 28th June, 1904, with cataract in her right eye. On the 6th July the cataract was removed as in the first case, and without escape of vitreous. On the following day, the eye was found to be quiet, the wound healed, and the anterior chamber reformed, but the pupil was drawn slightly upwards. Two days later the patient having knocked her eye, as was supposed, there was noticed a small subconjunctival prolapse of vitreous. The nature of this prolapse indicates the great value of the conjunctival flap in cataract extraction. By the 20th July the prolapsed vitreous had all but disappeared, and on the 21st the patient was dismissed as "well."

Case III.—R. McC——, male, aged 50 years, was admitted to the Glasgow Eye Infirmary on 28th October, 1904, with cataract of the right eye. On the 2nd November an attempt was made to extract the cataract as in the previous cases. The incision, however, proved to be not wide enough, and the lens was caught in the wound. As too free manipulation tends to cause escape of vitreous, and any attempt to enlarge the wound would probably have ruptured the capsule, the capsule was simply incised and the cataract delivered in the usual manner and without escape of vitreous. By the following day the wound had healed and the anterior chamber reformed. The patient was dismissed "well" on the 18th November.

Case IV.—J. C——, female, aged 76 years, was admitted to the Glasgow Eye Infirmary on the 24th February, 1905, with cataract of the right eye. On 1st March a superior extraction was performed. The iris got partly in front of the knife and prolapsed at the wound. An iridectomy having been performed, an attempt was made to remove the lens in its capsule. The lens came forward easily and protruded partially through the wound, but as the vitreous also began to prolapse

and a vectis was not at hand, the capsule was incised and the cataract delivered as in the previous case, but with considerable loss of vitreous. Atropine was used early, and nine days later slight iritis was noted. By the 21st the eye was quiet and there was no pain. Seven days later the patient was dismissed "well."

Remarks.—It may be objected that four cases are too few to found an opinion upon, but they show well the advantages and difficulties of the operation. In the first, an excellent result from an operative point of view was obtained; in the second, the advantage of a conjunctival flap was well brought out, since the prolapsed vitreous was not exposed to infection and was readily absorbed; in the third, the necessity for a free and wide incision was shown; and in the fourth, the danger of early prolapse of vitreous when the suspensory ligament is ruptured, as it must needs be in this operation, was brought into evidence. The great advantage of the operation is, of course, the absence of any need for further interference with the eye, so far as "needling" is concerned. In selected cases no doubt excellent results may be obtained by this method, but the ordinary combined operation appears to be safer for general use, especially in comparatively inexperienced hands.

CATARACT EXTRACTION.

(Sight results.)

BY

D. S. SAGER, M.D.,

OF BRANTFORD, CANADA.

The following case has some points of interest. The patient Mrs. C., 55 years of age, came to me about her eyes in September, 1905. Vision at that time was:—R., fingers dimly seen at one foot; L.—23 D. = 6/24.

The patient had been wearing glasses 21 years, the last time having been fitted with lenses by an optician, who gave her R.—16 D. and L.—18 D. An ophthalmoscopic examination showed a fully-developed cataract in the right eye, and a partially developed one in the left. The fundus of the left eye presented marked and extensive evidences of thinning of the choroid with choroidal atrophy, and pronounced pigmentation below the disc and towards the macula.

The patient was kept under observation for a period of between two and three years, at which time the left lens had

become sufficiently opaque to call for operation. An operation was performed on both eyes, with an interval of four months between each cataract extraction. Several months afterwards, when the eyes had settled down to a permanent condition, the vision was :—

R. 6/60 - 4 D. ⊃—1. D. cyl. axis 45° 6/18.
L. 6/24 - 0·50 D. ⊃—1. D. cyl. axis 60° 6/18.

An ophthalmoscopic examination of the right eye after the extraction showed the same general fundus features as the left.

Remarks.—There are a number of interesting things in connection with this case, which might be expected in a myopia of this degree. All these, however, are set aside to emphasize one particular point. The patient reads Snellen or Jaeger type as small as No. 2, using the right eye, and without any lens, at a distance of about 12 inches, and is able to read the ordinary newspaper print without difficulty and without using glasses, with the right eye, of course. The left eye, without a lens, also possesses under the circumstances of a damaged fundus, fairly good distant vision $\frac{6}{24}$. We have here a patient who after the removal of both lenses is able to dispense fairly well with a glass of any kind, either for distance or close quarters, simply by using one eye to the exclusion of the other. The patient would dispense with glasses entirely were it not contrary to advice. For obvious reasons, I prescribed a reading glass as follows :—

R. —1. Cyl. axis 45°, down and out.
L. +3·50 D. —1. Cyl. axis 60°, down and in.

"Bifocals" were ordered for street purposes, a form of spectacle which in this particular instance was worn with great comfort and satisfaction. It will be noticed the bifocals were made based upon the figures :—

R.—4 D. ⊃ —1. Cyl. axis 45°.
L.—0.50 D. ⊃ —1. Cyl. axis 60°. } + 4 D.S.

making a spectacle of light weight. Theoretically, it is quite possible that cases of this kind, in which after cataract extraction the patient is able to see to advantage without glasses, may occur; practically, they must be more or less of a rarity. For this reason the present case is reported.

A SYMPOSIUM UPON CATARACT EXTRACTION.

Comment nos maitres opèrent aujourd'hui la cataracte.

La Clinique Ophtalmologique, 25 novembre, 10 décembre, 25 décembre, 1905, and janvier 10 and 25, 1906.

Several recent numbers of *La Clinique Ophtalmologique* have been devoted to a symposium, in which the Editor, Dr. A. Darier, has collected various opinions with regard to extraction of cataract from eminent ophthalmic surgeons, mostly of French nationality. They may be abstracted as under :—

1. **Hess's** (Würzburg) views (abstracted from Volume VI of the new edition of the Graefe-Saemisch *Handbuch der Gesamten Augenheilkunde*) occupy the first number. Hess operates upon any patient whose sight is too defective to allow him to follow his usual occupation, irrespective of the "ripeness" or otherwise of the cataract. The night before operation, the eyes are washed with sublimate, 1 : 2,000, and covered with a wire mask, which fulfils the dual function of preventing contamination and of allowing secretions to escape. The edges of the eyelids, moreover, are treated with sublimate-vaseline, 1 : 1,000. The lashes are not clipped or epilated. During the actual operation, sterile solutions are alone employed. Dark rooms are condemned. Hess regards confinement to bed for twenty-four hours after operation as useful but not indispensable. The dressings are renewed daily, and consist of sublimate ointment (1 : 1,000) applied to the eye, and kept in place by a metallic shield, convex, provided with a central perforation, and kept in position for the first day by means of sparadrap and a bandage. Average stay in hospital fourteen days. With regard to the operation itself, Hess's incision, made with a Graefe knife, involves two-fifths of the circumference of the cornea ; discission of the capsule is carried out with cutting forceps, and the usual iridectomy is replaced by removal of a piece of iris from the base, in a way similar to that recommended by Pflüger. Prolapse of the iris, should such occur, must be reduced at once, and in case of recurrence, must be excised, and protective conjunctival sutures inserted. Hess employs in all cataract operations a binocular *loupe* with electric lighting. Hess considers carefully the somewhat important practical question of treating as out-patients those who have been operated upon for senile cataract. He admits that many such cases do well, but he also recognises the heavy responsibility that rests upon the shoulders of a surgeon who allows patients to go home. The Editor, Dr. **A. Darier**, however, appears to have few doubts

upon the matter. Since 1888 he has treated almost as many of his cataract cases outside as inside the *clinique*, although in such cases he always applies the dressings with great care, and never permits the patients to leave until an hour has elapsed since the extraction, so as to allow the anterior chamber time to re-form. The patients return for dressing the next day or the second day after the operation. The results, according to Darier's experience, do not differ in the two classes of case. In brief, Darier sees no objection to the out-door management of cataract, provided the patients desire to go home and are intelligent enough to apprehend the necessity for care.

2. **de Wecker** (Paris) disinfects the cilia by means of wool soaked in 1% mercury cyanide, sterilises instruments in the autoclave and then places them in mercury cyanide (1 : 1,000). The section involves a little less than one-half the circumference of the cornea. Iridectomy is done only exceptionally—"For a simple cataract," says de Wecker, "a simple extraction." The forceps-cystitome is employed only when patients are docile, and in other cases the ordinary cystitome is preferred. Much care is taken to expel lens-remains. Dressings are of wool, faced with tarlatane and fixed by means of collodion. The dressing is retained for five days. de Wecker attaches importance to dry dressings, and to the avoidance of the use of lotions after operation, unless secretion be present.

3. **de Lapersonne** (Paris) prepares patients for operation by treating the eyelids and the conjunctiva for two or three days with such antiseptics as argyrol, collargol, and mercury cyanide; by applying for twenty-four hours prior to operation a "test dressing"; and by ablating the lacrymal sac when dacryocystitis is present. Anæsthesia is secured with using cocaine and stovaine turn by turn. Instruments are sterilised by dry heat, and used from sterile water. The field of operation is illuminated by the electric photophore. For the last two years de Lapersonne has always made a small iridectomy or sphincterectomy, involving scarcely more than the small circle of the iris. In other words, he has now abandoned so-called "simple extraction," after having practised that operation for more than fifteen years. In certain cases de Lapersonne performs a preliminary iridectomy, a fortnight or three weeks before the extraction. Discission is done with the cystitome or with Landolt's knife (*serpette*); Tersen's capsular forceps is always kept in readiness. The cataract is removed in nearly every case by digital pressure. Great attention is paid to the "toilette" of the wound. Occlusive bandages are changed every day. The eye is examined on the third day. The eye which has been operated on is kept bandaged up for from eight to twelve days. When

the anterior chamber does not reform, or when the lips of the wound tend to gape, de Lapersonne recommends slight cauterisation with silver nitrate. With regard to the treatment of secondary cataract, posterior discission is performed twelve to fifteen days after extraction, if the soft material encumbering the pupillary field appears likely to entail fibrous degeneration of the posterior capsule. Ordinary cases are operated on in the fourth or sixth month by discission with Knapp's knife-needle or Landolt's instrument (*serpette*). In suitable cases the capsular sac is extracted. When marked adhesions exist, irido-capsulotomy is the best operation.

4. **Trousseau** (Paris) reduces his armamentarium to a minimum, and employs, in fact, a Graefe knife only in the extraction of cataract. This surgeon separates the eyelids and fixes the eyeball by means of his finger and thumb. He makes an upward section of the cornea with the knife, and, in doing so, divides the capsule of the lens. Next, the upper lid alone is raised, and the lens expressed with the back of the knife applied to the lower part of the cornea. Now and then expulsion is aided by slight pressure exercised upon the globe through the border of the upper lid. A dry dressing is applied, and atropine is instilled on the third day, when the eye is examined for the first time. Patients leave the hospital on the sixth day. Trousseau has had to deplore neither a single accident during operation nor a single consecutive suppuration. Hernia of the iris was observed in scarcely 6 % of his cases, while in 2 % only was there iritis.

5. **Landolt** (Paris) advocates careful examination, local and general, of every patient with "ripe" senile cataract. Such general conditions as diabetes, albuminuria, asthma, or chronic bronchitis, when present, demand particular precautions. The night before operation a bath is given, and the skin of the eyelids and face is washed with soap; the conjunctiva is rinsed with warm sterile saline solution; and, lastly, attention is paid to the state of the patient's feet. Local anæsthesia is obtained by 4 per cent. cocaine applied five times during the twenty-five minutes immediately before operation. The skin of the eyelids and neighbouring parts is then washed carefully with soap and sublimate, 1 : 5,000. Finally, the eyes are covered with aseptic gauze, retained in place by a knitted bandage. When the patient is upon the table the lids are everted, and the parts flushed with a warm sterile saline solution, 9 : 1,000. Landolt prefers ivory instead of metal handles to his instruments, which he sterilizes by boiling for fifteen minutes in distilled water, containing sodium carbonate. The hands of surgeon and assistants, after prolonged washing in hot water, are brushed with alcohol for one to two minutes, and then immersed in

sublimate, 1 : 1,000. They are dried by putting on sterilized linen gloves, worn until the moment instruments are actually handled. Landolt employs his own model speculum to separate the patient's eyelids. The corneal incision, made with a Graefe knife, is always very large, and a conjunctival flap, of which the height does not exceed 3 mm., is made. A large iridectomy forms part of the operation. The cystitome employed by Landolt was that described in the *Archives d'Ophtalmologie*, 1885, p. 52. The lens is extruded by digital pressure, the speculum having first been removed. After careful reposition of the angles of the iris, a drop of 4% (*sic*) atropine is placed in the eye, and the dressing applied. The latter consists of absorbent wool and a mask of trellised iron wire, kept in place by strings. The dressing is changed at the end of forty-eight hours, and an opportunity is then taken of examining the eye, in order to ascertain if the anterior chamber is reformed. Atropine is applied. On the seventh day after operation dressings are replaced by smoked glasses.

6. According to **Galezowski** (Paris), the essential condition of a good extraction lies in the precise diagnosis of the cause, nature, and consistence of the cataract. The eye is anæsthetised by cocaine 5%, the lids are separated by the author's speculum, and the globe is drawn downwards by means of fixation forceps. The section, made by means of a small special knife, involves the upper third of the cornea, terminates 2 mm. above the limbus, and is of semi-elliptical shape. The capsule is next incised. The iris is then seized with forceps, and a piece cut away by the assistant. The speculum is removed, the forceps laid aside, and the lens expelled by see-saw movements of the lower lid aided by a curette placed above the upper edge of the wound. The anterior chamber is cleared and the iris replaced by means of a curette. Vitreous is lost in 4 % or 5 % of Galezowski's cases. The operation once completed, eserine is dropped into the eye, the lids of which are dressed with aseptic taffetas,* absorbent wool, and a sterilised bandage. For the first twelve hours the patient bathes his eye every fifteen or twenty minutes with a solution containing naphthol, 01 ct.; carbolic acid, 10 ct.; distilled water, 1,000 gr., a process repeated once every thirty or sixty minutes until cure is complete. In Galezowski's practice, secondary cataracts are stated to be rare.

7. The brilliance of cataract operations, **Abadie** (Paris) points out, has lost much of its importance since the introduction of antisepsis and of cocaine. Nowadays the aim of every surgeon is to prevent infection of the wound. In the pre-antiseptic era Abadie had at least 5 % of suppurations after his operations for cataract, whereas in the last fifteen years, during which careful

*To be obtained from Pharmacie Mialhe, 8, Rue Favart, Paris, France.

aseptic precautions have been adopted, four instances only of suppuration amongst upwards of 1,000 extractions have occurred. It is of interest to note that the source of infection was traced in each of these four cases. Thus, in the first it was due to defect in the hot air steriliser; in the second and third cases, which occurred in the course of one week, to infection from influenza, from which Abadie was suffering at the time; and in the fourth case to infection from an eruption on the skin of the patient's eyelids. Abadie maintains strongly that suppuration is the outcome of infection of the operation wound, and is not due to general constitutional defects, as diabetes, on the part of the patient. Although the performance or otherwise of iridectomy as part of operation for cataract now possesses a merely secondary importance, yet Abadie believes that a correctly executed iridectomy entails neither æsthetic nor optical disadvantages. Iridectomy, besides, avoids risks of the iris prolapsing, and facilitates the evacuation of cortical masses in unripe cataract. Again, in case secondary operations are called for, the gap in the iris resulting from iridectomy renders surgical interference easier. On the other hand, in "ripe" cataract, iridectomy may be dispensed with, and prolapse be prevented by the application of 1 % pilocarpine to the eye when the operation is completed. In short, Abadie holds that as regards this vexed question one should remain eclectic, practising iridectomy or not according to the individual conditions presented by the patient.

8. **Badal's** (Bordeaux) patients are prepared by a hot bath and careful cleansing of the skin of the face and eyelids the night before operation. Conjunctival catarrh is treated for three or four days by weak solutions of zinc sulphate or silver nitrate; the lacrymal sac is extirpated in case persistent disease is present. Instruments (kept exclusively for cataract cases) are boiled for ten minutes in a solution of sodium carbonate, placed in a sterilised towel to cool, and used dry. Anæsthesia is obtained by 2·5% cocaine, kept in glass capsules until the moment of use. The patient's hair and face are covered with sterilised cloths, which leave only the eye and the nose free. In principle, Badal is a partizan of iridectomy, although exceptionally he performs the "simple operation," or even extracts the lens in its capsule. Noyes' blepharostat is used. Before incising the cornea, Badal marks with small forceps the height of the flap, so that the latter shall be precisely placed even if the patient moves his eye during the operation. Moreover, it allows the surgeon to appreciate the degree of local anæsthesia. The section is made by inserting the knife 2mm. above the horizontal meridian of the cornea on the outer side, and 0·5mm. behind the limbus, and by making

the counter-puncture at a corresponding spot on the other side of the globe. Badal does not make a conjunctival flap. The iridectomy is performed in two stages—that is to say, by cutting first one angle and then the other, the eyeball being meanwhile pressed downwards by the blades of the scissors. The speculum is next removed, and the upper lid raised with the finger. The anterior capsule is incised with the cystitome in such a way as to form a small triangle, apex downwards. The lens is expelled by pressure exercised above the scleral wound with a special spoon (*pelle*), and upon the cornea with an ordinary curette. The "toilette" of the pupillary field is carried out with great care. An occlusive aseptic dressing is applied for six or eight days, and then replaced by a simpler arrangement. A fortnight represents the average stay in hospital.

9. **Rollet** (Lyons) prepares his patients over-night in much the usual way. He applies a "test dressing," and if abnormal secretion be found, invariably postpones the operation. In cases of dacryocystitis, he extirpates the lacrymal sac. Metallic instruments are alone employed. They are sterilised for two or three minutes in a vessel containing purified olive oil, boiling at 150° C. They are then placed in boiling water. Rollet, who adopts the "simple operation," never uses a speculum. The operation completed, a couple of drops of methylene blue (1 : 1,000) are placed in the eye, and the lids covered with dry discs of gauze. A binocular bandage is kept in place for four days, when a monoculus is substituted. Between November 3rd, 1904, and a corresponding date in 1905, Rollet has one suppuration amongst 321 extractions, and 4% to 6% of prolapses.

10. **Lagrange** (Bordeaux) advocates minute attention to the local and general condition of the patient suffering from cataract. Purgative night before operation. "Test dressing." Anæsthesia obtained by applying—first, several drops of adrenaline (1 : 2,000); next, holocaine, 1%; and, lastly, cocaine, 1%. Whilst these various medicaments are being used, the skin of the eyelids, etc., is washed with soap, and the conjunctival culs-de-sac are flushed with weak antiseptic fluid, as boric lotion or cyanide, 1 : 6,000, with the aid of a special *laveur*. Any cilia that may be loose are pulled out between the surgeon's finger and thumb The operator's hands, after thorough cleansing with soap and hot water, are immersed in alcohol and then in mercury cyanide. Sterilized blouses are worn by the surgeon and his assistants. The patient's head is enveloped in sterilised towels. All collyria are preserved in hermetically sealed glass capsules. Everything intended to touch the patients, as dressings, sponges, and so forth, is sterilised by heat in white metal receptacles, which are kept closed until the moment when

such things are needed. Instruments are disinfected in the stove. A small vessel filled with boiling water stands upon the operating table, so that any instrument may be purified at a moment's notice. Lagrange performs a "simple" operation in about 10% of his cases. He dispenses with iridectomy when the cataract is hard and "ripe," and when the iris is very contractile. The puncture is made on the temporal side of the globe at a spot about 2 mm. above the horizontal meridian of the cornea and 0.5 mm. behind the sclero-corneal margin. The counter-puncture is made at a corresponding spot on the nasal side of the eyeball. The section ends in the limbus above when the combined extraction is undertaken and a little below that point in simple extraction. The iridectomy is of average size. After removal of the speculum, Fuchs's capsular forceps are employed to remove as big a piece as possible of the capsule. When the capsule is too hard to be dealt with in this way, a crucial incision is made in it with the ordinary cystitome. The lens is removed by pressure. When difficulty is experienced in getting rid of cortical remains, Lagrange washes out the anterior chamber by means of Chibret's flow and return syringe, filled with artificial aqueous humour. The electric light is employed in order to make sure that the anterior chamber is free from *débris*. Eserine is usually dropped into the eye, whether iridectomy has or has not formed part of the operation. If there is any suspicion of lacrymal mischief, iodoform is sprinkled over the wound and the puncta lacrymalia. Both eyes are covered with gauze moistened with boric lotion, kept in place by wool and a lightly-applied crape bandage. For two days liquid food is given, and then the patient is allowed to leave his bed, the eye that has been operated on being covered with Snellen's shield and strips of sparadrap. After "simple" extraction, if the pupil looks black, eserine is instilled at the first two dressings, and then replaced by atropine. Atropine is alone used when the pupil is not so black as it should be. After "combined" extraction, atropine is applied from the first dressing.

11. **Snellen** (Utrecht) regards diabetes and albuminuria not as absolute contra-indications to operation for cataract, but rather as conditions calling for a proper *régime*, and as suggesting but a brief stay in bed. Chronic bronchitis is treated with the *liqueur ammoniacale anisée*, and liability to attacks of sneezing, with wool soaked in cocaine placed in the nares, and constipation with the usual remedies. In those with arterio-sclerosis, hæmorrhage, and in rheumatic subjects, iritis is to be apprehended. The night prior to operation, the eyes are cleansed in the usual way, and a "trial dressing" of sublimate (1 : 5,000) is applied. Instruments are cleansed by boiling, are rubbed with

alcohol, and are then arranged in the order in which they will be used. The surgeon's hands are brushed and washed—first, with soap, and, then, with sublimate (1 : 1,000). The eyelids and conjunctiva having been washed anew, the operation is commenced. A speculum is not employed, the lids being held apart either by the fingers of the assistant or by means of Pellier's elevators. The corneal section, made with a Graefe knife, had better, in Snellen's opinion, be too large than too small. It should involve about one-half the circumference of the cornea. Snellen attaches importance to the making of a small conjunctival flap. The capsule is incised or excised, according to circumstances. Only when capsule is adherent to the cataract is the latter extracted, after iridectomy, in its capsule. In other cases, iridectomy forms no integral part of the operation as practised by Snellen. Cortical remains are sought by the aid of focal illumination, and, when found, are usually removed by digital massage. Daviel's curette is sometimes employed for the purpose. *Lavage* of the anterior chamber, in the author's opinion, is dangerous. Finally, when the cortical masses resist the various measures mentioned above, their removal may be facilitated by the performance of an iridectomy. The eye that has been operated on is covered with sublimate wool, gutta-percha tissue, and the well-known aluminium shield devised by Snellen several years ago. Dressings removed twice a day. Patient allowed to sit up the day after operation. When the wound is well closed, the eye is merely protected by means of a transparent celluloid shield. Snellen advocates early discission, say, a fortnight after extraction—that is, before the capsule has had time to become resistant. Spectacles at the end of three weeks, and careful correction of all astigmatism.

12. **Mayweg** (the Hague) condemns artificial maturation, and contents himself with preliminary iridectomy four to six weeks before extraction when the cataract is not "ripe." The sac is extirpated when the lacrymal passages are impermeable. The day before operation the patient bathes and puts on clean linen and clothes. The cilia are cut close, and the eyelids and neighbouring parts washed—first, with benzine, and, then, with sublimate soap. On the day of operation the patient is clad in aseptic material, the conjunctiva is irrigated with mercury cyanide, 0.3%, and a gauze veil is placed over the nose, mouth, and beard of the surgeon, whose hands are most carefully disinfected. Cocaine, 4%, is instilled into the conjunctival sac three times in ten minutes; the sac is then washed with sterile saline solution; and, lastly, a drop of adrenaline is applied to the eye. Mayweg, as a rule, employs a speculum, and adopts a linear incision, a conjunctival flap, and an iridectomy. When

dealing with extremely nervous subjects, he makes his corneal section downwards. The iridectomy is rendered painless by a drop of cocaine, 1%, placed in the anterior chamber. The capsule is torn by means of a simple cystitome. The lens is expelled by pressure exercised upon the two lips of the wound by means of spatulas. Atropine is dropped into the eye and iodoform applied to the wound. Both eyes are bandaged. A narcotic, as chloral or veronal, is administered. Dressing changed every twenty-four hours, and abandoned, on the average, on the fifth day. Discission, if necessary, practised on the tenth day. Patient leaves the hospital in a fortnight. Spectacles prescribed in the sixth week.

13. **v. Michel** (Berlin) employs a speculum, makes an upward section involving one-third of the cornea and a conjunctival flap 3mm. to 4mm. in height, and performs iridectomy. Discission with cystitome, so that the capsule is torn in three directions. Atropine. Binocular dressing for twenty-four hours after operation. Patient discharged on seventh or eighth day. The patient conducts himself as though he had not been operated on; coming and going in full light, and eating, drinking, and smoking at table with the other inmates of the hospital.

14. **Pagenstecher** (Wiesbaden) publishes a series of aphorisms, from which the following may be abstracted. Never operate upon a patient who manifests signs of fever, or whose other eye shows traces of inflammation. If the second eye is phthisical or painful on pressure, enucleate it or resect the optic nerve. Operate only upon mature cataract, and in other cases mature by massage through the cornea, after preliminary iridectomy. A conjunctival flap should be made, and iridectomy should almost always form part of the operation for extraction. Rapid reconstitution of the anterior chamber is the best safeguard against prolapse of the iris, and that is the main reason why Pagenstecher recommends a conjunctival flap. Although the "simple" operation has many advantages, yet it also has its drawbacks in the shape of prolapse (8 % to 10 % even in the hands of the best operators), inflammatory accidents, sympathetic ophthalmitis, and difficulty in removing cortical masses. This leads Pagenstecher to advise beginners always to practise iridectomy as part of the operation for extraction. *Lavage* of the anterior chamber should be avoided. Discission through the sclerocorneal region should be done when there no longer exists any inflammatory reaction, but as soon as possible. As regards dressing, Pagenstecher employs compresses of gauze, impregnated with a mixture of ichthyol and liquid paraffin, and fixed in place by wool and a metallic framework.—SYDNEY STEPHENSON.

(*To be concluded.*)

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

I.—THE STATISTICS OF CATARACT.

Gerok. M.—Clinical and statistical contribution to the knowledge of uncomplicated cataract. (Klinisch-statistischer Beitrag zur Lehre der uncomplicierten Stare.) *Beiträge zur Augenheilkunde*, 56 Heft, Mai, 1903.

Gerok's paper is based on the material of the eye clinic of Tübingen, where cataract forms 6·9 per cent. of all ocular disorders. The conclusions to which Gerok comes are as follows.—There is no marked difference with regard to sex, and no special predisposition of either eye to cataract. Most eyes affected are emmetropic or slightly ametropic, a fact which rather tells against Schoen's well-known theory. The cataract morbidity increases up to 80 years of age, and then decreases for unknown reasons. Gerok's figures with regard to this point deserve quotation, as he has taken the trouble to reduce the proportion to their respective shares of the total proportion of Wurtemberg. The relative cataract morbidity for the first decade of life being put as 1, it is:—

Between	11	years	and	20	years	...	0·17
„	21	„	„	30	„	...	4·3
„	31	„	„	40	„	...	8·0
„	41	„	„	50	„	...	26·6
„	51	„	„	60	„	...	112
„	61	„	„	70	„	...	220
„	71	„	„	80	„	...	224
„	81	„	„	—	„	...	141

Heredity in senile cataract is found in 4·9 per cent.; in juvenile and congenital cataract in 14·2 per cent. Senile cataract, if inherited, shows no tendency to appear earlier in life; congenital forms appear, if at all, usually in the same form in the progeny. Occupation forms no clear predisposition, neither does unusual strain of accommodation. Special etiology is mentioned but rarely, but feverish affections with consecutive debility and affections of the heart and the vascular system, seem to favour the development and the more rapid progress of cataract. R. GRUBER.

II.—THE SURGICAL TREATMENT OF LAMELLAR CATARACT.

Ask, Fritz.—On the surgical treatment of lamellar cataract. (Zur operativen Behandlung des Schichtstars.) *Klin. Monatsbl. f. Augenheilkunde*, 1905, Bd. I., p. 480.

Sight may be improved in lamellar cataract, as everybody knows, by two different surgical operations: first, by iridectomy or iridotomy, and, secondly, by removal of the cataractous lens. Each of these operations has its definite indications, although among individual surgeons there is a difference of opinion as to which should be adopted in a given case.

Vossius (*Lehrbuch der Augenheilkunde*, 1892) advises a narrow iridectomy when the opacity is large and when sight can be improved by means of atropine and the stenopæic slit. On the other hand, discission can be carried out only when the pupil dilates widely to atropine. Fuchs (*Lehrbuch der Augenheilkunde*, 1903), Michel (*Lehrbuch der Augenheilkunde*, 1890), and others, who mostly favour discission, prefer iridectomy when the lenticular opacity seems likely to remain stationary and when sight can be markedly improved by dilatation of the pupil. Silex (*Kompendium der Augenheilkunde*, 1902) regards iridectomy as of little use as regards sight, and advises discission. Sir Anderson Critchett (*Trans. Ophthalmological Society*, Vol. XX, 1900, p. 230) is an advocate of iridectomy in suitable cases of lamellar cataract. Nettleship (*Ibidem*, p. 231) is of opinion that iridectomy should be performed in exceptional cases only. Bähr (*Centralbl. f. prak. Augenheilk.*, XXIV) sees in removal of the lens the sovereign remedy for lamellar cataract. Grut (*Klin. Monatsbl. f. Augenheilkunde*, XLII, 1) rejects iridectomy as a means of treating this form of cataract.

With a view to reach a definite opinion upon the vexed question of iridectomy *v.* discission in cases of lamellar cataract, **Ask** has examined the records of Professor Schoeler's eye clinic in Berlin. It seems that Schoeler performs iridectomy when sight for near and distant objects can be bettered by dilating the pupil, correcting associated errors of refraction, and employing a stenopæic slit. The figures obtained by Ask in the course of his enquiry are as under:—since the year 1897 the near vision was improved in 37 of the 46 cases where iridectomy was performed. As regards distant vision, the last-named remained *in statu quo* or underwent improvement in 37 among 42 cases of iridectomy for lamellar cataract, while it showed some deterioration in five cases. In reference to the last, however, the sight was tested once only and not long after operation, so that some of these patients, who were mostly

of tender age, may have improved later. Ask reports in detail seven (7) cases of lamellar cataract in which iridectomy was performed upon one eye and discission upon the other. In every instance, save one, whichever operation was adopted, the sight was improved. In four of the cases the results as regards sight did not differ in the two eyes, although treated by different methods. In one case the eye on which iridectomy had been performed showed the worst visual result. But in every case it is important to note that the eye that had been subjected to iridectomy was used for near work, even although the other eye might be visually the better of the two. Complete removal of the lens, without doubt, yields the best possible vision. In lamellar cataract, myopia of medium degree (usually below 5 D) is the error of refraction most commonly met with. After iridectomy glasses may often be dispensed with, but after removal of the lens strong glasses both for near and distant sight are necessary, a thing likely to be inconvenient in many occupations, such as domestic service, and so forth. Moreover, discission and other operations for removal of the lens are much more dangerous and likely to be complicated than iridectomy, and must often be followed by secondary operations for after-cataract. Iridectomy, on the contrary, is done at one sitting, and is practically devoid of danger. Under what circumstances, then, should the lens be removed in cases of lamellar cataract? Ask replies that it should be undertaken when the cataract shows signs of progression, or when the amount of myopia associated with the condition exceeds 14 D. In some cases with high myopia (>8 D. to 10 D.) Ask has removed the lens from one eye, and performed iridectomy on the other, thereby allowing the patient to dispense with glasses both for near and for far sight. S. S.

III.—THE PATHOLOGY OF CATARACT.

(1) **Thompson, Edgar S.—Observations on the pathology of the crystalline lens.** *Annals of Ophthalmology*, July, 1904.

(2) **Harms, Cl.—Anatomical account of a case of spontaneous resorption of senile cataract within the capsule. (Anatomische Mitteilung zur Spontanresorption seniler Katarakt in geschlossener Kapsel.)** *Klin. Monatsbl. f. Augenheilk*, 1905, I, p. 147.

(3) **Terrien, F.—Miliary abscesses developed in the corneal cicatrix after the operation for cataract. (Abcès miliares développés dans la cicatrice cornéenne après l'opération de cataracte.)** *Archives d'ophtalmologie*, juin, 1905.

(4) **von Hippel, Eugen.—Anatomical researches on congenital cataract, being also a contribution to our knowledge of a new malformation of the lens. (Anatomische Untersuchungen ueber angeborene Cataract zugleich im Beitrag zur Kenntniss einer neuen Missbildung der Linse.)** *Von Graefe's Archiv für Ophthalmologie*, Juli 4, 1905.

(5) **Lewis, Frank N. and Thompson, Edgar S.—Zonular cataract with irideremia: extraction of the lens, which had become entirely opaque, in the capsule, with microscopic examination.** *Ophthalmic Record*, August, 1905.

(2) **Harms** adds another to the six cases already reported of the anatomical examination of cataractous lenses absorbed within the capsule. A widow, aged 75 years, was seen in August, 1903, suffering from violent radiating pains in the left eye, which had been blind for seven years. A senile cataract had been successfully removed from the other eye in June, 1888. No history of injury. Upon examination, the left eye was congested, tension *plus* I, sight equal to hand movement, projection uncertain, and a yellowish body, recognised as the crystalline lens, lay in the lower part of the anterior chamber, surrounded by the loose and folded capsule. The atrophic optic disc showed a glaucomatous cup, about 4 D. in depth. The eye was removed, hardened in alcohol and formol, embedded in celloidin, and serial sections were made through the entire globe. The lens-remains, which measured 4·8 mm. by 1·7 mm., lay, surrounded by the relaxed and folded capsule, against the posterior surface of the cornea in the lower part of the anterior chamber. The nucleus, of regular outline, still showed traces of lamination. The capsule was closed, as shown by the examination of numerous serial sections. Careful search was necessary to find any endothelial cells, and the few met with were degenerated. Between the capsule and nucleus an amorphous tissue containing cell nuclei was found. Angle of anterior chamber widely open; meshes of ligamentum pectinatum not much thickened, and not blocked by cellular elements. Iris and ciliary body atrophic. Hyaline degeneration of the ciliary processes Endarteritis of some of the vessels of the anterior uveal tract. Retina markedly thinned, but vessels practically normal. Optic nerve atrophic. Papilla excavated, and lamina cribrosa pressed backwards. The absence of the capsular endothelium from some of the reported cases led v. Hippel to surmise that resorption of the cataract was due to primary disappearance of the endothelium, thus allowing the aqueous humour to find its way into the lens capsule. Axenfeld and Natanson, however, believe that resorption of the cataract in the capsule represents the final stage of

a long-existing Morgagnian cataract, and has nothing to do with the endothelium. Harms points out that in all cases where upon pathological examination the endothelium was missing, the cataract had developed years before. He therefore suggests that disappearance of the endothelium is merely the terminal stage of the spontaneous absorption of cataract. It is probable that liquefaction of the lens substance deprives the endothelium of its natural internal support, so that the layer may eventually become entirely detached by the incessant movements of the capsule. S. S.

(3) **Terrien**, in a brief note, draws attention to small masses of polynuclear leucocytes—to miliary abscesses in fact, that he has often observed with the microscope in the corneal cicatrix left in dogs soon after the experimental removal of the crystalline lens. The small leucocytic collections may be found, even during the first few days after the operation, in the epithelium covering the wound. They are not visible to the naked eye. Terrien surmises that they may exist in man also, and, in that event, that in predisposed subjects they may become the starting-point of infections of the eyeball. S. S.

(4). In examining the eyes of three new-born rabbits, affected with microphthalmos and coloboma, and also the eyes of a child, three days old, with identical malformations, **v. Hippel** found the following anomalies in the lens :—(1) a ridge formed by the proliferation of the capsular epithelium, encircling the capsule at the place where the mesodermal ingress produces the coloboma ; (2) the lens shows an annulus similar to the one normally seen in reptiles and birds ; (3) abnormal arrangements of the lens-fibres ; and (4 formation of cataract, especially liquefaction of the lens. Von Hippel thinks that most of these changes are due to the action of the mesodermal ridge, the effect of which must be greater if the vitreous is scanty, as it is likely to be, in eyes with considerable microphthalmos. The presence of an annulus seems to point to a connection of coloboma with atavistic manifestations. Considering the comparative frequency with which cataract occurs in microphthalmos, and the striking appearance of the lens in these cases—generally flat and extremely small, and often quite different from what clinical examination would lead one to expect—these anatomical changes as found immediately at birth are of great interest. They also show how short a time is sufficient to lead to the formation of cataract. R. GRUBER.

(5) The sight of a man, aged 44 years, had always been poor, and upon examination by **Lewis** there were found irideremia and cataract—hypermature in the right and mature in the patient's left eye. Through an upward corneal section the left

lens was removed in its capsule by means of a wire spoon. Slight loss of vitreous. With + 14 D. sph. V. = 20/100. Operation on the second eye was not attended with such favourable results (V. = 2/200). **Thompson** examined the lens in its capsule removed from the left eye, with results that may be epitomised as follows.—Capsule intact. Lens had undergone cataractous degeneration of different degrees in different parts. The usual position of the opaque zone in lamellar cataract showed advanced degeneration and pronounced intervals between the lenticular fibres, filled with granular detritus and spheres of Morgagni. There was a second "zonular" area farther out. The nucleus was sclerosed and fissured. Beneath the capsule the cortex was converted into a pultaceous mass, devoid of all fibrillar structure. Some twelve radii of advanced degeneration extended from the larger zonular area to the capsule. These radii were composed of spheres of Morgagni and detritus. They were so sharply defined from the more normal fibres around them that it was evident that the patient originally suffered from a rather uncommon form of congenital zonular cataract, upon which total cataract was ultimately grafted, as it were.

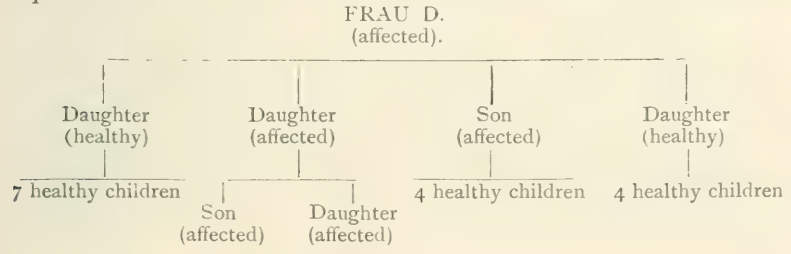
IV.—HEREDITY AND CATARACT.

(1) **Horovitz. Heinrich.—A family with lamellar cataract. (Eine Schichtstarfamilie.)** *Berlin Thesis*, 1903. Gustav Schade, Linienstrasse, 158.

(2) **Hunter, T.—Two cases of idiopathic general cataract in children closely related.** *Lancet*, 27th May, 1905.

(3) **Nettleship, E.—On heredity in the various forms of cataract.** *Royal London Ophthalmic Hospital Reports*, Vol. XVI, Part III, 1905.

(1) **Horovitz** reports five cases of lamellar cataract in three consecutive generations of the same family, seen between 1874 and 1902 in Professor Hirschberg's practice. The accompanying "tree" demonstrates the relationships of the patients in question:—



Horovitz draws attention to the circumstance that the disease is here transmitted through the distaff side. He quotes cases described by Knies, E. Müller, Storbeck, Hosch, &c., and discusses the etiology of the condition, which he ascribes to malnutrition due to rickets. He adduces the views of other observers; and, in conclusion, mentions the methods of operation adopted by his chief, Hirschberg. J. F. S.

(2) **Hunter's** two patients were first cousins. The grandfather of the children had an incipient cataract in one eye.

(3) For the purposes of this paper, cataract is divided into two classes: Class A—Acquired or Post-Natal; Class B—Congenital. Of Class A, **Nettleship** has 145 families, containing 500 affected persons. Class B contains 183 patients, of whom 90 were males and 93 females, besides about 55 in which the sex is not stated. The cases are carefully worked out, and, as far as possible, the histories are given. It is almost impossible to abstract the paper, which must itself be read, in order to appreciate the various points it brings out. C. D. M.

V.—CATARACT OPERATIONS.

(1) **Koslowski.**—Upon the cure of posterior capsular cataract. (Ueber die Heilung der hinteren Capselstare.) *Archiv für Augenheilkunde*, November, 1904.

(2) **Chavez.**—The treatment of hypermature cataracts. (Cataratas hipermaduras.) *Anales de Oftalmologia*, Novémbre, 1904.

(3) **Condon, Captain de Vere.**—Two cases of cataract extraction. *British Medical Journal*, January 28th, 1905.

(4) **Kuhnt, H.**—On cataract extraction in cases of shrunken conjunctival sacs. (Ueber Starextraktion bei wesentlich eingeengtem Bindehautsacke. *Zeitschrift für Augenheilkunde*, Februar, 1905.

(5) **Rogers, F. T.**—Reclination of the lens: under certain conditions a justifiable operation. *Journal of the American Medical Association*, 22nd April, 1905.

(5A) **Hirschberg, J.**—On the operation for removal of the soft lens of sympathetic ophthalmia, with remarks on sympathetic ophthalmitis. (Zur Operation des sympathischen Weichstars nebst Bemerkungen ueber sympathische Augen-Entzündung. *Centralbl. für prak. Augenheilkunde*, April, 1905.

(5B) Pascheff.—Iridotomy in extraction of cataract. (L'iridotomie dans l'extraction de la cataracte.) *Archives d'ophtalmologie*, avril, 1905.

(5C) Baiardi.—Notes on the cataract operations performed in the Ophthalmic Hospital from 1893 to 1904. (Considerazioni sulle operazioni di Cataratta praticate nell'Ospedale Oftalmico dal 1893 al 1904.) *La Clinica Oculistica*, Aprile-Luglio, 1905.

(6) Businelli.—A clinical lecture on artificial maturation of cataract. (Sulla maturazione artificiale delle cataratte di lento decorso. Lezione clinica.) *Riv. Italiana di Ottalmologia*, May-June, 1905.

(7) Domec.—Posterior division of the capsule in secondary cataract. (De la section capsulaire postérieure dans la cataracte secondaire.) *La Clinique Ophtalmologique*, 25 juin, 1905.

(8) Alonso, Antonio.—The place of iridectomy in the operation for senile cataract. (La iridectomia en la extraccion de la catarata senil.) *Anales de Oftalmologia*, September, 1905.

(9) Smith, Major Henry.—Extraction of cataract in the capsule. *Indian Medical Gazette*, September, 1905, and *Archives of Ophthalmology*, November, 1905.

(10) Emeljanow.—The operative treatment of cataract in the Horse. (Die operative Behandlung des Katarakts beim Pferde.) *Berl. Tierärztl. Wochens.*, 1905, *p.* 559, and *Die Ophthal. Klinik*, 20 Oktober, 1905.

(10A) Girard.—Iridotomy in secondary cataract. (Les cataractes secondaires à iridotomie.) *Rev. générale d'ophtalmologie*, octobre, 1905.

(11) Hirschberg, J.—On the crucial division of iris and capsule done at separate times. (Ueber zweizeitigen Kreuzschnitt zu Iris- und Kapsel-Zerschneidung.) *Centralbl. f. prak. Augenh.*, November, 1905.

(11A) Chavez.—Hypermature cataracts. (Des cataractes ultra-mûres.) *Recueil d'Ophtalmologie*, novembre, 1905.

(12) Oxley, Captain J. C. S.—Cataract extraction in the capsule. *Indian Medical Gazette*, December, 1905.

(13) Blaschek, A.—Report on 500 cases of cataract extraction. (Bericht über 500 Katarakt-Extraktionen.) *Zeitschr. f. Augenh.*, Ergänzungsheft, 1905.

(14) **Fick, A. E.—On division of the ciliary nerves, avoiding the optic nerve. (Ueber Durchschneidung der Ciliarnerven mit Schonung des Sehnerven.)** *Zeitschr. f. Augenheilk.*, Januar, 1906.

(1) **Koslowski** (Kiev) has an article upon the cure of posterior capsular cataract, especially as it now and then occurs in diseases of the choroid and retina. During the last five years he has operated on twenty-one cases, of which four were affected with retinitis pigmentosa, three with choroido-retinitis, seven with choroiditis, while in seven the fundus was free from morbid changes. The sight was improved in all but three of these cases. In order to remove the capsular cataract, Koslowski first renders the lens opaque. This, as he points out, may be effected in one of two ways: first, by massage through the cornea after the performance of a preliminary iridectomy; or, secondly, by repeated discission. He finds the latter much preferable to the former method of operating. The time consumed by repeated discissions, however, is great, so that Koslowski has adopted another plan in his twenty-one cases. He performs a preliminary iridectomy, and follows that up with one or two "needlings." He then extracts the more or less transparent lens and its capsule. This succeeded in seven of the twenty-one cases, but in the others Koslowski was compelled to remove the capsule by introducing forceps into the eye. S. S.

(2) **Chavez** holds that it is much safer to treat these cases by removing the lens with its capsule in a scoop. Extraction in the ordinary way is almost always complicated by loss of vitreous or by luxation of the lens. The capsule is very dense and inelastic, and will not tear in the usual way; if much force be used in the attempt to lacerate it, the whole lens is often driven back into the vitreous; even if the capsule is torn, it is so altered that it does not retract and allow of the passage of the lens through the rent. On the other hand, extraction by the scoop is associated with very small loss of vitreous, and the results are usually good. HAROLD GRIMSDALE.

(3) In **Condon's** first case the lens was delivered in its capsule. The second case is so unusual that it may be described almost in the author's own words. A cataract was removed from the eye of an old man, aged 60 years. After the extraction of the lens, the pupil still remained white. Thinking that a piece of opaque capsule remained behind, Condon tried to remove it by upward pressure on the cornea. To his astonishment, a second cataractous lens presented in the wound, and was delivered in two segments, being broken along its weakest and thinnest diameter. This lens differed from the first in being

about 2mm. in thickness at its circumference, and towards its centre in resembling tissue paper. It appeared to be plano-concave.

(4) **Kuhnt**, on account of the extensive prevalence of trachoma in his district, has to operate on many cases in which the conjunctival sac is either extensively diseased, or else so reduced as to make ordinary manipulations difficult or open wounds dangerous. He advocates in all these cases cataract extractions by the subconjunctival method. An area of conjunctiva from the lower corneal margin downward is raised, and the corneal incision made under cover of this protecting layer. The operation takes longer to do, but is said to be much safer. It is therefore to be recommended in all cases where great care must be taken, such as operation on an only eye, in nystagmus, in unruly patients, etc. A. LEVY.

(5) The argument of **Rogers**' paper is that reclination has been successful in many instances, that it may be safely done, and that under certain conditions, it is a justifiable procedure. Citing Argyll Robertson's statistical paper of 5,729 cases with its 82% of successes, the main support of the first assertion, and obtaining a concensus of opinion from seventy-six prominent ophthalmic surgeons in the United States of America, the author states that the advisability of the procedure may be considered as follows: with the aged or infirm, or with those suffering from exhausting diseases; in cases in which there is a non-curable affection of the conjunctiva or lacrymal sac; in cases in which one eye has been lost by suppuration or by hæmorrhage following operative procedure, and a similar result is feared; in cases of obstinate bronchitis; upon eyes in which there is a fluid vitreous with tremulous iris; with the insane or with unmanageable patients; and with the very deaf, in whom the assistance of the patient cannot be secured. CHARLES A. OLIVER.

(5A) **Hirschberg** reports the case of a woman, *æt.* 26, who lost her left eye from detachment of the retina with secondary glaucoma, for which an iridectomy was done. One month after this, irido-cyclitis in the right eye. The left was promptly removed, and the right improved somewhat under treatment, but in the course of the next year became totally blind from secondary cataract, and remained so for two years. When Hirschberg saw her first, the eye was soft, and the iris atrophied and bound down with fibrous tissue (carrying vessels) in the pupil. The operation consisted in making an incision into the anterior chamber, and with a large capsule forceps removing that portion of the anterior capsule which occupied the pupil, and then washing out the soft lens material. The eye recovered perfectly, and vision was fingers at $1\frac{1}{2}$ metres with a good field. Hirschberg draws attention to

the fundus changes in sympathetic disease, which he has already described — five spots of choroiditis in the periphery of the fundus. A. LEVY.

(5B) Instead of the usual iridectomy, **Pascheff** practises iridotomy during the extraction of the cataract. For this purpose he employs a special instrument (see *Wochens. f. Ther. u. Hygiene des Auges*, März 9, 1905), an " iridotome "—that is to say, a sharp hook upon which slides a small knife capable of movement by means of a ring at the end of the instrument. The hook, introduced into the anterior chamber, engages the sphincter, which is then divided by means of the blade. H. DE V.

(5C) **Baiardi** (Turin) declares that simple extraction, as compared with all other operative treatment, is by far the best operation to perform, inasmuch as it leaves the eye in its normal state, with the exception of the hypermetropia consequent on the removal of the lens, which, of course, is afterwards easily corrected by appropriate glasses. Whatever be the precise method employed, however, it is not only the immediate effect that deserves our consideration, but more particularly the final results—that is, whether the patient will continue to enjoy the vision obtained, or will, owing to some complication or other, lose it. Simple extraction—that is, extraction without iridectomy—has the disadvantage of rendering the exit of the cortical matter more difficult, and hence the greater frequency of secondary cataract, and the entanglement of the iris in the corneal cicatrix easier, a complication often leading to secondary glaucoma. For the purpose of avoiding the above complications Baiardi has modified the operation of simple extraction by introducing a peripheral iridotomy. Having made the corneal section, Baiardi introduces Wecker's blunt forceps-scissors perpendicularly to the surface of the iris and cuts a small hole in it; he then goes on with cystotomy, etc., and having extracted the nucleus, introduces once more Wecker's instrument into the original hole made in the iris and enlarges it to half the size of the corneal incision. Through the iridotomy thus obtained, he extracts the whole of the cortical substance, and thus obviates the disadvantages of simple extraction, *viz.*, secondary cataract and prolapse of iris, and at the same time obtains the advantages proper to the same operation, *viz.*, a central pupil, greater acuteness of vision, and better adaptation of the pupil to the different intensities of light.

CHARLES MANCHÉ.

(6) **Businelli** advises artificial maturation by means of massage of the anterior capsule. He notes that the anterior cortex only is much affected by this procedure, and suggests that it might be advisable, under certain circumstances, to introduce a spatula

through an incision in the sclerotic and massage the posterior capsule. He does not think that such a procedure would be attended by much risk, but he has never attempted it.

(7) **Domec** here describes a method of division with a specially curved knife of his own design. No drawing of the knife is given. The blade is introduced vertically at the corneal margin, and apparently is made to penetrate the membrane and then divide it from behind forwards. ERNEST THOMSON.

(8) In spite of the obvious attractions of the simple operation, the round mobile pupil, the absence of blood during the operation, and the prevention of prolapse of capsule, **Alonso** thinks the disadvantages are sufficient to counterbalance them. Chief of these is the frequency of prolapse of iris. This can be avoided with certainty only by iridectomy. On the other hand, the disadvantages of the combined operation are largely theoretical, and it possesses many special features. The toilet of the pupillary field and the avulsion of the capsule are much facilitated by an iridectomy. The prolapse of the capsule is much easier to deal with satisfactorily than prolapse of the iris.

HAROLD GRIMSDALE.

(9) **Major Smith** gives the results of one year's work thus:—

TABLE *showing results of cases submitted to extraction in the capsule at Jullundur Civil Hospital from the* 31*st May*, 1904, *to the* 31*st May*, 1905.

Nos.	Iritis.	Escape of Vitreous.	Capsule bursting.	Capsule left behind.	First-class results.	Second-class results	Failures.
	Per cent.	Per cent	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
2,616	0·3	6·8	8·0	4·28	99·27	0·38	0·34

The figures in the third, fourth, and fifth columns are practically the same as those of an earlier series of cases given in a paper read at the British Medical Association meeting of 1903 (*see* THE OPHTHALMOSCOPE, Vol. II, *p.* 203). Major Smith's enormous experience, extending to more than 9,000 of these operations, gives an impression of finality to the percentages, as probably approximating very closely to the best possible results of extraction in the capsule, at least under the conditions obtaining in the Punjab. The losses of vitreous were small in all but nine very nervous patients, in whom the accident "would have occurred in any operation." Three of these nine eyes were lost. Excluding 112 cases in which capsule was left behind through accidental rupture, there were 2,494 complete extractions. Among them there were only two cases of iritis, whereas among patients when capsule was accidentally or purposely left behind,

iritis occurred in five per cent. of the cases. The inflammation is attributed to irritation of the iris by minute particles of lens substance left with the capsule. During the year there were 151 ordinary extractions performed either in children or for cataracts in adults which were considered unsuitable for the complete operation. Among such cataracts Major Smith places "atrophic" lenses and others with a bluish tinge. Among the 2,494 complete operations there were nine absolute failures through suppuration. An iridectomy was made in all the operations, "hence the absence of prolapse of iris." In previous years iridectomy was usually dispensed with. Major Smith does not recommend his operation to be performed by beginners.

(10) **Emeljanow** operates in the horse by discission of the crystalline lens, and reaches the following conclusions:—(1) General anæsthesia is not necessary for discission, local anæthesia sufficing; (2) The operation is very simple; and (3) Puncture of the cornea and evacuation of the aqueous humour are not often complicated by prolapse of the iris. KLETT (Stuttgart).

(11) **Hirschberg** reports two cases—the first, a woman, *æt.* 58, who, three years previously, had a cataract removed, followed by several needlings. Now, there was a thick capsular membrane, absolutely opaque. The first operation consisted in dividing the membrane horizontally, which gave patient some vision, and eleven days later a vertical section of the membrane was performed. After some weeks, with adequate glasses, patient's vision = $\frac{6}{12}$, and this improved somewhat in the course of the following two years. The second case, was that of a woman, *æt.* 59 years, who had had a cataract removed two years previously, an operation followed by inflammation. When Hirschberg saw her the eye presented a dense secondary membrane, to which the iris was adherent and the pupil was drawn considerably upwards. The following operation was performed: a narrow Graefe knife was introduced at the corneo-scleral junction on the outer side just below the horizontal meridian of the cornea. The point of the knife in the anterior chamber was made to transfix the iris, and pushed along behind it for 4-5 mm., then out of the iris across the anterior chamber and out at the nasal corneo-scleral margin. The knife was then made to cut upward slightly, the point withdrawn into the anterior-chamber, the cutting edge turned forwards and the bridge of iris tissue cut across, and the knife withdrawn. It was then found that the membrane behind had also been cut, and thus a fair pupil was formed. This, however, quickly filled up with exudate, and a second operation was necessary. A "baby"-Graefe knife was entered through the cornea at a point corresponding to the lower border of a moderately dilated pupil, the point carried upwards

to the upper border of the displaced pupil, and with a single lifting movement the iris and membrane were divided vertically. This at once gave a large central pupil, and vision shortly after with proper glasses = $\frac{6}{12}$, and this has, so far, been maintained.

A. LEVY.

(11A) **Chavez** strongly recommends the extraction of the lens in its capsule in cases of hypermature cataract presenting the following clinical signs :—

More or less decided minus tension, increase in depth of the anterior chamber, opacity of the lens and its capsule, and a tremulous iris. The latter sign the author regards as being due to rupture of the zonule of Zinn and the invasion and softening of the anterior part of the vitreous by the aqueous humour. Extraction with cystotomy is not suitable for these cases, because the capsule is too thick and tough to be easily divided, and if divided it does not retract owing to the loss of its elasticity. Pressure applied in order to force the lens through generally results in rupture of the attenuated suspensory ligament, luxation of the lens and escape of vitreous. Further, should the lens be successfully extracted, the opaque capsule and adherent cortex, which cannot be completely removed by either curette or intra-ocular irrigation, render the establishment of a clear pupil and good vision impossible.

The author regards an iridectomy as desirable, and prefers to extract with a Snellen's vectis rather than a Pagenstecher's spoon. The same operation is adopted both for spontaneous and traumatic capsulo-lenticular cataracts. The author finds it necessary to perform this operation in about 5% of his cataract cases. His results are good (V.=$\frac{6}{12}$ and $\frac{6}{6}$ with correction, in two of the recorded cases).

In two cases only has he seen inflammatory complications (iritis and irido-choroiditis), and he has never observed detachment of the retina or atrophy of the globe.

The total number of cases in which he has performed this operation is not given. J. JAMESON EVANS.

(12) **Captain Oxley**, himself a beginner, contends that lenses should be extracted in their capsules, even by inexperienced operators, and, in support of this contention, gives his own results :—

No. of Cases.	Escape of Vitreous.	Capsule burst.	Capsule left behind.	1st class results.	2nd class.	Failures.	Iritis.
40	12	3	1	37	1	2	2

He states that the loss of vitreous was small in all cases, and no ill effects were observed. There were no suppurations. An iridectomy was made in all cases. Captain Oxley holds that this method of extraction is no more difficult than the ordinary one; that it practically eliminates iritis; and that the patient can leave hospital earlier.

(13) **Blaschek** reports all the cases operated on for cataract at Graz clinic for the space of about three years—500 in all. The method of operation was the usual one with a conjunctival flap, but without iridectomy. The field of operation, including the conjunctivæ, were cleansed the day before the operation with cyanide of mercury, and again prior to the operation. Special care was taken to ensure asepsis. The surgeon and his assistants wore sterilized gowns and caps, and veils over nostrils and mouth, to prevent distribution of particles while speaking. All instruments were boiled, and then transferred to a lysol solution. As far as results are concerned, 20 eyes were entirely lost from various causes. Of 374 cases done without iridectomy, 33 had prolapse of the iris. A. Levy.

(14) **Fick** cites two cases of severe irido-cyclitis following operative interference ("needlings"), which refused to yield to the ordinary remedies and in which vision had been reduced to a very low pitch. Before proceeding to enucleation, in order to safeguard the other eye, Fick performed a more or less complete division of the posterior ciliary nerves. In both cases the improvement was immediate, and the eyes in the course of a short time became quiet and pale, and vision improved. Consequently, Fick is a believer in this form of treatment, and advocates its adoption. A. Levy.

VI.—THE PATHOGENY OF CATARACT.

(1) **Pfister, Jul.—Our present knowledge concerning the nourishment of the lens and the origin of cataract.** (Die gegenwärtigen Kenntnisse der Linsenernährung und der Katarakt-Entstehung). *Correspondenz-Blatt für Schweizer Aerzte*, Februar 15, 1904.

(2) **Peters.—Further contributions to the pathology of the lens.** (Weitere Beitraege zur Pathologie der Linse.) *Klin. Monats. f. Augenheilkunde*, 1904, Bd. II, p. 37.

(3) Grilli, J.—Contribution to the cryoscopy and pathogeny of senile cataract. (Contribution a la cryoscopie et pathogénese de la cataracte sénile.) *Recueil d'ophtalmologie*, October, 1904.

(4) Leber, Th.—On the causation of cataract. (Zur Pathogenese der Katarakt.) *Klin. Monatsbl. f. Augenheilkunde*, 1905, I, p. 324.

(4A) Peters, A.—On the causation of cataract. (Zur Pathogenese der Katarakt.) *Klin. Monatsbl. f. Augenheilkunde*, 1905, I, p. 621.

(5) Roemer, Paul.—The pathogeny of senile cataract considered with regard to the results of serum researches. (Die Pathogenese der Cataracta senilis vom Standpunkt der Serumforschung.) *v. Graefe's Archiv f. Ophthalmologie*, Bd. LX 2 Heft, April 18, 1905.

(6) Zirm, Ed.—Our present knowledge of the nutrition of the lens and of its disturbances. *Wiener Klin. Wochenschrift*, 12, 1905.

(7) Osterroht.—Cataract in tetany. (Katarakt bei Tetanie.) *Die Medizinische Woche*, 1905, 15, and *Woch. f. Therapie u. Hygiene des Auges*, 27 April, 1905.

(8) Stein, W. H.—On cataracta perinuclearis unilateralis. (Ueber Cataracta perinuclearis.) *Beiträge zur Augenheilkunde*, Mai, 1905.

(9) Zirm, Ed.—On tetany cataract. (Zur Tetanie-Cataract.) *Archiv für Augenheilkunde*, P. 183, Bd. LII, Juni, 1905, and *Archives of Ophthalmology*, November, 1905.

(10) Leber, Alfred R.—On the metabolism of the crystalline lens. (Zum Stoffwechsel der Krystalllinse.) *v. Graefe's Archiv f. Ophthalmologie*, November 14, 1905.

(11) Ruch.—Is there a connection between goitre and cataract? (Besteht ein Zusammenhang zwischen Struma und Catarakt?) *Thése de Berne*, 1905, and *Rev. générale d'Ophtalmologie*, janvier, 1906.

(12) Wibo.—A contribution to the etiology of certain forms of cataract. (Contribution à l'etude de la pathogenie de certaines cataractes.) *Compte-rendu du service d'Ophtal. de l'hôpital Saint-Jean, Bruxelles*, 1905, and *Rev. générale d'ophtalmologie*, janvier, 1906.

(1) **Pfister** (Lucerne) publishes a paper on the nutrition of the lens and the origin of cataract, in the course of which he cites the views of many well-known authorities. He

endeavours to answer, as far as may be, the three following questions :—1. How does cataract originate? ; 2. Can its onset be averted? ; and 3. Is it possible to prevent further development when the condition has once commenced.

In fœtal life the nutrition of the lens is provided for by the nexus of vessels known as the tunica vasculosa lentis, the blood supply of which comes from three sources, *viz.*, the hyaloid artery, the vitreous arteries, and the so-called circulus arteriosus iridis major. The venous blood is discharged through the iris, crossing the circulus arteriosus iridis major, reaching the area of the choroid, and, finally, empting into the venæ vorticosæ. In the post-fœtal state nutrition must clearly be effected in a different way, in order to permit of the perfect transparency of the crystalline lens. It has been proved experimentally that by a process of diffusion albumin can pass into and out of the lens. Colouring material dissolved in the blood-stream appears moderately soon at the equator of the lens, and later in the lens itself. Becker has shown that the sugar-contents of a lens in a case of diabetes change rapidly in consonance with the sugar-contents of the urine. With artificially induced diabetes, sugar has been found in the lens within a short time of the production of the diabetes. Nourishment reaches the lens, therefore, by endosmosis. At the same time, its metastasis does not obey the usual laws of diffusion, inasmuch as it does not gradually approximate its composition to that of the surrounding medium. During life, to a certain degree, the lens has the power of preserving unchanged its composition, which differs markedly from that of the aqueous and vitreous humour. True endosmosis takes place only after death. In short, the lens has certain powers of selection, since it rejects some substances that are useless to it, and attracts others that it requires. The cause or causes of this variation from the usual processes of endosmosis are not yet fully explained, although it may be taken for certain that the capsule and, in particular, the capsular endothelium are closely connected with this remarkable power of selection. The possibility of filtration may be excluded, since under normal conditions, the capsule is stretched, as it were, so that the pressure inside is greater than that outside the lens. Filtration, however, may occur under pathological conditions, which will receive attention later. The kind of nourishment supplied to the lens and its precise method of distribution must be regarded as open questions. Becker believes that he has observed interfibrillary spaces, in which the fluid circulates. Schlosser, also, thinks that nutritive fluid enters at the equator of the lens, reaches the posterior surface, flows thence around the nucleus in

perinuclear canals, and, finally, leaves the lens by means of a "crown of pores" in the anterior capsule. Samelson noted a collection of rust particles at the anterior pole of the lens, after an iron splinter had penetrated the crystalline. He therefore imagined that the particles could not escape through the fine pores in the anterior capsule, whose existence had been suggested by Schlosser. This view, however, can scarcely be correct, since a similar phenomenon occurs when the splinter lies not in the lens but in the vitreous humour. The iron doubtless reaches the spot in question by a process of diffusion, as explained by Leber. Briefly, the theory of a system of canals in the substance of the lens and of pores in the anterior capsule cannot be maintained.

The nutritive fluid of the lens is doubtless supplied by the ciliary body and, more particularly, by the ciliary processes. The origin of cataract is closely connected with the nutrition of the lens, since every lens turbidity is based upon a disturbance of nutrition. Traumatic cataract is a case in point. An opening in the anterior lens capsule admits the aqueous humour, so that the lens becomes swollen, turbid, and eventually absorbed. Knapp has shown that in some animals, as the frog, a localised opacity only occurs, and that this may clear up again almost completely. In non-traumatic cataract there are two possibilities: (1) that the arrangement protecting the healthy lens from the destructive influence of the normal humours is eliminated; or (2) that the quality or the composition of the nutrition is altered.

Amongst authors there is almost complete unanimity of opinion that the protective power resides in the capsular epithelium. It has been shown experimentally that lesions of the capsular epithelium may produce cataract. For example, in this connection Kiribuchi's experiments upon rabbits may be quoted. That observer directed the sparks of six combined Leyden jars against the supra-orbital region of rabbits, and found that cataract resulted from death of the capsular epithelium and hyperæmia of the ciliary body and iris. Hess confirmed necrosis of the capsular epithelium after exposure to an electric shock. Leber observed extensive destruction and folding of the epithelium underlying an intact capsule by stroking a freshly-extracted ox lens with a ball-pointed probe. In the light of these experiments it becomes easy to comprehend the principle of Förster's maturation of unripe cataract by massage of the lens. By producing a lesion of the capsular epithelium, the conditions of diffusion are altered, and turbidity of the lens ensues. J. R. v. Geuns ligatured the venæ vorticosæ, and thus produced hæmorrhage into the anterior and

posterior chambers. It was found that if collateral circulation was quickly established, so that the rise in tension within the eye was neither intense nor long continued, the capsular epithelium, although damaged, soon repaired itself, and cataractal changes, if already initiated, did not advance. Under opposite conditions—*e.g.*, when high tension lasted for a long time—the epithelial cells suffered considerable damage, and the whole lens became opaque. In this connection may be mentioned those rare and interesting cases of spontaneous absorption of cataract in the closed capsule. Up to the year 1900, thirty-four cases of the kind had been collected from the literature by A. v. Reuss. Where anatomical examinations were possible, it was found that the capsular epithelium was absent, signifying that the aqueous humour was thus enabled to penetrate the lens and to effect absorption of the latter. It is of interest to recall the fact that in nearly one-half of these cases absorption of the lens was preceded by an inflammatory condition of the uveal tract, which it may be assumed led to the disappearance of the capsular epithelium.

In so delicate an organ as the lens, variations in nutrition, although seemingly insignificant, may yet determine considerable disturbance. Peters (*Weitere Beiträge zur Pathologie der Linse*), in a case of tetany with cataract, has found microscopical changes in the ciliary body and processes, along with a cloudiness of the outer layers of the cortex of the crystalline lens. Similar changes were also found by the same observer in a case of senile cataract. Peters therefore suggests that the epithelium of the ciliary body exercises a selective function, with the consequence that the nourishment supplied by it to the lens is poorer in albumin and salts than the blood plasma. In order to determine the quantity of salt in the aqueous humour, Peters induced cataract in rabbits by the administration of naphthalin. Before any changes could be found in the lens there was found an increase in the amount of salt. On ceasing the naphthalin, the salt was found to return to its normal proportion. If further experiments confirm Peters' observations, many points in the pathology of the lens will find a rational explanation. For instance, the ripening of immature cataracts will be explained. A more highly concentration supplied by the ciliary epithelium abstracts water from the lens, leading to a reduced volume, a fact already remarked by Priestley Smith. If the increase in salt is intermittent, water will again enter the lens, and, finally, a swelling of the lens ensues—the stage of intumescence. Magnus (*Die Entwicklung des Alterstars*) says that the structural alterations of senile cataract originate from the equator in 82% of the cases—that is to say, from the

point which we have seen above to be the entrance point of the nutritive fluid of the lens. The theories of albuminuria (Deutschmann) and of atheroma of the carotid (Michel) to account for the causation of cataract have been unable to withstand the test of continuous control observations. Peters, then, inclines to the view that further observations in senile and indeed all forms of cataract in an intact capsule will reveal alterations in the ciliary epithelium as the primary change. In secondary cataract, such as that met with in choroidal disease, we must assume that the inflammation passes over to the ciliary body, and in that way sets up a disturbance of the nutrition of the lens. In primary cataract—*e.g.*, in senile cases and in naphthalin cataract—the epithelial changes are brought about by a toxin circulating in the blood. When we consider that excretory epithelium, as that of the kidney, is specially sensitive to toxins in the blood-stream this idea does not appear to be at all improbable. That naphthalin cataract is not the outcome of direct action upon the lens is proved by the fact that large quantities of that substance can be introduced into the anterior chamber without producing turbidity of the lens (Hess). The conclusion follows that the cataract is produced by the poison in the blood acting on the ciliary body. Indeed, Magnus and Kolinski have found a very high degree of hyperæmia of the ciliary body to be present in the first stages of naphthalin cataract. We have no idea as to the exact nature of the toxin that we assume to cause senile cataract. A merely senile change in the composition of the blood cannot be the cause, since then all old persons should suffer, and that is not the case. The fact that the cataract is practically always bilateral proves that its cause must be sought in the blood.

The cataract in diabetes is probably due not to the direct action of sugar but, as observed by Hess and others, to changes in the posterior surface of the iris, analogous to those already described by Peters in the ciliary body. The human lens when placed in a 5% solution of sugar becomes turbid, but even in the highest grade of diabetes, the amount of sugar in the fluids of the eye is very small. Thus, Deutschmann in a patient with 8% of sugar in the urine found 0.5% in the aqueous and only 0.366% in the vitreous humour. Peters, following up his hypothesis, believes that the posterior surface of the iris participates in the selective functions of the ciliary epithelium. The process may accordingly be similar in diabetes to that which leads to the formation of cataract in naphthalin poisoning.

It is probable also that disturbances in the ciliary body may be responsible for the production of lamellar cataract. Horner states that in 80% of these cases there is a history of rickets, a

view which dates from the times of v. Arlt (1883). A similar factor is probably also at work in the production of total congenital cataract.

Glass-blowers' cataract, cataract from loss of blood, ergot poisoning, and from extremely loud sounds have as yet been too little studied to cast much light upon the question of origin.

In conclusion, Pfister returns to the three questions propounded at the commencement of the abstract. As to the first (the origin of cataract), the discussion has at least indicated a way on which perhaps all forms of the disease may be explained on a common basis. As to the second question, prevention is possible only when there is a question of intoxication with a poison whose nature is known. The answer to the third question (development), must be in the negative with one limitation, *viz.*, that the influence of accommodation on the formation of cataract yet remains to be settled. Schön supposed that with accommodation a tearing of the capsule by the zonular filaments occurred. Other observers dissent from this view. Hess, in particular, reaches the conclusion that the Helmholz conception is correct, and that accommodation implies not an increased but a lessened strain upon the zonule. At the same time, Hess does not deny a possible connection between accommodation, on the one hand, and turbidity of the lens, on the other, which he explains by assuming that in old age the nucleus of the lens becomes harder and less yielding, so that during accommodation the peripheral layers press more or less strongly against the harder nucleus of the lens. In this way the formation of gaps and slits between the filaments is favoured, and the first beginnings of cataract initiated. With the idea of preventing cataract, not only presbyopia, but hypermetropia also, should be carefully corrected with glasses, a warning that evidently applies also to astigmatism and the irregular strain thrown upon the ciliary muscle by that state of refraction.

R. FORD.

(2) **Peters** describes two new cases of cataract which resulted from tetany. The microscopical examination showed alteration of the epithelium of the ciliary body (tumefaction of cells. vacuolisation), and œdema of the interior layers of the retina. The lens had the appearances of zonular cataract. Peters is of opinion that tetany damages the ciliary epithelium and thereby produces an alteration of the aqueous humour, thus giving rise to cataract through disturbing the nutrition of the lens. The details of this work must be read in the original.

A. BIRCH-HIRSCHFELD.

(3) In this paper **Grilli** brings forward further clinical evidence in support of his theory of cataract production (*vide* THE

OPHTHALMOSCOPE, Vol. II, p. 527). He further suggests that the progress of cataract may be impeded by methods calculated to increase the amount of water in the body, and that immature cataracts may be artificially matured by methods—such as sudorifics—calculated to diminish the watery constituents of the body fluids. J. JAMESON EVANS.

(4 and 4A) These two papers by Leber and Peters respectively are essentially controversial in character. The latter author resents that Leber, in his book "Die Cirkulations und Ernährungsverhältnisse des Auges," Graefe-Sæmisch," Vol. II, 2, did not refer to his (Peters') researches in the causation of cataract, while Leber states his reasons for not having done so. The views of **Peters** may be briefly summarised as follows: the primary change occurs in the epithelium of the ciliary body; it produces an increase of the inorganic salts in the aqueous humour; from this altered concentration of the aqueous humour results the impairment of the nutrition of the lens, the immediate effect of which is a shrinking of the nucleus. **Leber** raises the following objections against the significance of these changes in the ciliary body: (1) They may be simply *post-mortem* changes or produced artificially. (2) They have been observed in the absence of cataract, *e.g.*, in normal eyes after a certain age and as a result of ergotine poisoning. (3) Where the two conditions are met with simultaneously their interdependence is not proved, not to say disproved, as in cases of naphthalin-cataract where the opacities in the lens occur earlier than the changes in the epithelium of the ciliary body. On the other hand, the increase of the inorganic salts in the aqueous humour, as ascertained by Peters himself, is so very slight that it is difficult to attribute much importance to it, especially if it is considered that conditions like intraocular hæmorrhage, which would increase the amount of salts considerably, do not give rise to cataract. C. MARKUS.

(5) Different hypotheses have been advanced to explain the causation of senile cataract, but we are still far from a satisfactory solution of the problem. The theory most generally accepted is Decker's, which finds the origin of the disease in the lens itself, and connects its development with irregular sclerosis during the changes incidental to old age. Schön somewhat similarly blames the displacement of the lens fibres effected by excessive accommodation for the onset of cataract, and Magnus, the impediment to circulation of nutritive fluid caused by the hardening of the lens substance. Another school of pathologists, headed by Peters, attribute particular importance to the morbidly affected osmosis from the anterior chamber, especially by increased per-

centage of salts in the aqueous humour ; but it is a fact that even so sensitive cells as blood corpuscles do withstand a much more considerable variation of osmotic pressure than 0·03—0·05 % as they occur, according to Peters, within the ocular fluids. A third line of thought has always connected cataract with changes of the whole organism, without entering into details, but attaching particular importance to disturbances of the circulatory apparatus, as seen during senility. The most fatalistic idea of all is, of course, that the individual simply outlives the vitality of the capsular epithelium, cataract thus representing premature death of the lens, and then no remedy could possibly meet the case. **Roemer** proceeds on altogether new lines. Just as the blood corpuscle can be destroyed by the specific action of certain well-defined poisons, so it is admissible to look in cataract for the action of such a specific virus. Naphthalin has already been proved to be a lenticular poison of this kind. The blood serum contains poison specific for cells of certain other species, and possessing a cytotoxic principle which acts cytic towards alien erythrocytes and bacterial cells. Under certain well-known conditions blood serum also develops a poison acting against its own cells. Roemer's hypothesis starts from this point. He argues that the senile metamorphosis of the human organism offers conditions favourable to the formation of autocytotoxins, which may possess a specific affinity towards some important part of the lenticular protoplasma, and which therefore, if not retained by the organs of secretion, are drawn towards the receptors of this protoplasm in exactly the same way as the hæmolysin affects the blood corpuscles. Now this, of course, remains a mere hypothesis, but it fits in with many theoretical and practical considerations, and may provide a starting point which may lead to useful results, even if the theory as a whole should not be able to stand the searching criticisms which are sure to be directed against it. Anyhow, it has already led to some remarkable and interesting investigations of which more anon. It must be clearly understood that the mere formation of these cytotoxins would in any case be insufficient to produce any change in the lens ; it is necessary that they should pass into the ocular fluids. It is a great achievement of Wessely and Roemer himself to have shown that under normal circumstances no cytotoxins are filtered into the internal fluids of the eye. The same law also applies to the heterogenic bactericidal ambiceptors. This result is very important as showing that serumtherapy stands only a very poor chance in ocular therapeutics, especially in infection of the vitreous. It is necessary for the inflammation to have made great progress to render the vessels

permeatable, and thus give the anti-bodies access to the inside of the eye. The conditions with regard to the anterior chamber are here much more favourable than for the vitreous, which explains the more favourable course of infections in the former.

Roemer's second paper deals in a interesting way with the complicated problems of nutrition which our modern knowledge of the miraculous biological properties of living protoplasm have opened for us. What Roemer tries to prove is that the structure of the lens admits in principle the action of anti-bodies, by containing corresponding receptors which bind them. Ehrlich, the father of serum-science, distinguishes between three forms of receptors, those of the first, second, and third type. Broadly speaking, they account for immunisation, agglutination, and cytotoxination respectively. Roemer is able to prove the existence of all three kinds of receptors in the protoplasm of the lens. He shows, for instance, that the lens matter of all examined species of animals agglutinates blood of the guinea pig (of no other animal and that only at certain temperatures), that it also contains receptors of the first order by being able to neutralise one component of the tetanus poison (the tetanolysin, not the tetanospesium), and also that it exerts antihæmolytic action towards the blood of the rabbit. The experiments directed towards elucidation of these points are of a most painstaking as well as complicated character, and they certainly go far towards enlarging our knowledge of the protoplasmic functions of the crystalline lens. Their importance, it need hardly be said, lies not in proving the fact that the lens matter agglutinates blood of a certain kind, immunises against the action of certain toxins, etc., but in pointing towards the extreme perfection wherewith the protoplasm is, as it were, timed, receiving, acting towards, intercepting, and binding substances of a certain well-defined character and bodies of quite specific toxicity. These laws of affinity, unexplored as yet, are at the root of the normal conditions of nutrition, as well as of pathological changes. Roemer formulates this rule in the words that only such substances and feeding materials can be assimilated by the lens, which contain groups corresponding to its recepters, a theory which must, of course, vastly complicate all our ideas of circulation and osmosis, which do not take the living nature of the tissues into account. In Roemer's opinion it is not so much alteration and defects of nutrition or osmosis but the action of cytotoxic serum compounds, which affect the protoplasm of the lens and thereby produce cataract.

Roemer's work is not yet complete, and we shall further report on it as it is published. R. GRUBER.

(7) A woman, aged 45 years, had always lived in great poverty, and had nursed eight children for an unduly long time. Since her first confinement, nineteen years ago, she had suffered from cramp. The stomach was dilated, and the thyroid gland was very small. For seven years she had been blind from double cataract. She presented the typical symptoms of tetany. The urine contained 1 % of albumen, in addition to hyaline casts. **Osterroht** connects the cataract, the atrophied thyroid gland, and the tetany one with another. MAX P.

(8) **Stein** reports five cases of unilateral perinuclear cataract, in at least four of which the condition was due to traumatism. He thinks that perinuclear cataract is here due to a mechanical separation between the central and the peripheral portions of the lens, and also sometimes to a traumatic cataract, which was total in the first instance, having become enclosed by transparent lens substance which was formed at a subsequent period. R. GRUBER.

(9) The credit of first pointing out the connection between some cataracts and a history of preceding fits is due to Sæmisch. Many writers afterwards adduced cases in which cataracts developed rapidly consequent on fits, which were always described as of the nature of tonic muscular spasm, such as is produced by ergot poisoning. Meinert and Bernhardt suggested that most of these cases were probably examples of tetany, a malady which had not been recognised as a clinical entity in the time of the earlier writers. To this and to the allied forms of cataract produced by ergotism and naphthalin, Peters has devoted a considerable amount of attention. At first he was inclined to ascribe the cataract formation to interference with the nutrition of the lens brought about by the temporary tetanus of ciliary muscle, but later he came to the conclusion that the cause was a pathologically raised percentage of salts in the aqueous humour produced by degeneration in the epithelium of the ciliary processes. He would offer a similar explanation for senile and diabetic cataracts. Much more extensive researches, however, are necessary before any definite opinion can be formed as to the cause of cataracts, whether they are a sequence of tonic spasm of ciliary muscles or of alterations in the aqueous, brought about by degenerations in the epithelium of the ciliary processes, or produced by the direct action of some toxin, or, lastly, whether they may not be caused by a simple atrophy of lens fibres. **Zirm** describes five cases, and in a postscript a sixth, in which there appeared to be a definite connection between tetany and the onset of cataract. It is worthy of note that in all the cases epiblastic structures seemed especially to suffer. The patients showed the typical symptoms of tetany. After a debilitating

illness the cramps set in, and at the same time the hair began to fall out and the nails to drop off. In one case a condition resembling pemphigus set in. In one of the cases the external eye muscles were amongst those affected by the tetanoid spasm, and in another case there was, during the attacks, undoubted accommodative spasm. We cannot in a brief abstract give fuller details of these cases, nor can we accompany the author into the general discussion on the causation of cataract, but we give his conclusion (with which we are in cordial agreement), namely, that these various nutritional disturbances appear as the result of some toxic substance which specially attacks the nutrient supply of the different epiblastic structures, and that the tetanoid cramps of the hands and of the ciliary muscles are only co-ordinate, and not causative phenomena. LESLIE PATON.

(10) In experimenting on the diffusion of sundry organic and inorganic bodies into the lens, **A. R. Leber** finds that different substances show great variety of penetrating power, which may be due to the chemistry of the lens, which reveals a remarkable elective power. While referring the reader for details to the original paper, it is interesting to note that Leber, who is not aware of Roemer's work, throws out a suggestion which tallies closely with Roemer's conclusions (*see* abstract No. 5 above). Leber refers to H. Meyer's and Overton's researches on the action of narcotics. These authors reason that as nervous substances are largely built up of fats and similarly constituted bodies, they must show a special affinity for chemically indifferent substances if they are readily soluble in fats; and that all substances similarly constituted act as narcotics. Overton compares these nervous structures with a wet sponge, whose texture is formed of what he calls "lipoids," while the fluid represents the protoplasmic imbibition water. Now it is clear that anything possessing a special affinity to either constituent must disturb the molecular balance and alter its physico-chemical condition. Leber finds that the metabolism of the lens shows remarkable analogy to that of the central nervous system, and it is a remarkable fact that among "lipoids" and narcotic substances we find some which have a well-known influence on the lens-substance even in small dosage, and which, as Leber shows, penetrate remarkably fast into its central portion. He thinks that absorption of even very small quantities of these substances might, if long continued, lead to changes of the molecular constitution of the lens.

R. GRUBER.

(11) From his clinical experiences and his statistics **Ruch** draws the conclusion that no relation exists between goitre and cataract. Among 5,910 patients at the eye polyclinic belonging to the canton of Berne, where goitre exists in from 54% to 90%

of the inhabitants, the proportion of cataracts was 3.9%—that is to say, smaller than in the eye clinics of Germany, where goitre is rare. Among 58 patients who were treated surgically for goitre in Berne, the author found three only with cataract, but their ages ranged from 54 to 69 years. Amongst 42 patients suffering from cataract who were operated on at Berne, the proportion of those with goitre was no greater than among the cantonal population in general. G. SIMON.

(12) **Wibo,** after having discussed the well-known connection between certain affections of the eye and those of the teeth, goes on to show that there exist purely idiopathic cataracts, occurring in young, vigorous persons, free from hereditary or acquired disease. In this particular class of case one is struck with the correlation between the commencement of the opacity and certain neuralgias of dental origin. By reflex action upon the irido-choroidal tract, the dental irritation alters the nutritive conditions of the crystalline lens, and thereby provokes the appearance of cataract. E.R.

VII.—CATARACT DUE TO THUNDER, LIGHTNING, OR ELECTRICITY.

(1) **Morgan, Major J. C.—A case of traumatic cataract due to lightning stroke.** *Journ. Royal Army Medical Corps*, February, 1905.

(2) **Verhaeghe, D.—Cataract produced by thunder-clap. (Cataracte par coup de foudre.)** *Gazette des Hôpitaux*, 8 août, 1905.

(3) **Ellett, E. C.—Cataract caused by a discharge of industrial electricity.** *Ophthalmic Record*, January, 1906.

(1) A man, aged 22 years, entered the Army in April, 1900, when he passed the tests for sight without difficulty. In January, 1902, being then encamped outside Pretoria, he was struck by lightning, and in consequence was blind for some days. The sight of one eye was eventually recovered, but that of the other remained defective. When examined by **Morgan** in October, 1903, a cataract was found to be present in the blind eye, the sight of which was equal to distinguishing finger-movements only.

(2) **Verhaeghe** distinguishes between injuries to the eye caused by lightning and those due to thunder-clap. Such injuries may be of several kinds, and may involve: (1) cornea; (2) crystalline; (3) fundus; and (4) ocular muscles. Of these, injuries to the lens are much the commonest. Verhaeghe relates

the following case, observed at Lille in the service of Professor Baudry.—A custom-house officer, aged 34 years, one night in June, 1901, was overtaken while in the open by a violent storm, during the course of which thunder fell near him and threw him into a ditch. The man, although giddy for some moments, did not actually lose consciousness. Some months afterwards (January, 1902) vision began to fail slowly, and when the patient was examined in November, 1903, it was R. $= \frac{1}{8}$ and L. $= \frac{1}{40}$. The defective sight was found to be due to lenticular opacities. There were, moreover, vitreous opacities in the left eye, as well as slight pigmentary change in one part of the periphery of the fundus. Under treatment by iodine, internally and locally, some improvement took place, but in October, 1904, a preliminary iridectomy was done on one eye, and this was followed by the extraction of the cataract in March, 1905. The corrected vision of the eye that had been operated on reached $\frac{1}{2}$. Briefly, then, an interval of six or eight months elapsed between the accident and the affection of sight due to incipient changes in the lens; the lesion in this case was bilateral; and the cataract attained maturity only after lasting for upwards of three years. Verhaeghe concludes by discussing each of the possible ways by which an electric current may damage the eyes—that is to say, by producing chemical changes in the histological elements, circulatory disturbances in the anterior segment of the eye, or by a purely mechanical action. S. S.

(3) **Ellett** reports cataract in a man of 35 years, due to a discharge of industrial electricity. The case recalls one published by Desbrières and Bargy in the *Annales d'oculistique* for February, 1905.* Ellett's patient received a shock from a direct current of 500 volts, which also burned the left side of his nose and face. "Electric ophthalmia" of the right eye followed, and recovered in ten days. In something less than three months (81 days) after the accident, numerous sub-capsular opacities of the lens were observed, and the cataract had become mature about $2\frac{1}{2}$ months later. The other (left) eye remained normal throughout.

VIII.—COMPLICATIONS AFTER CATARACT EXTRACTION.

(1) **Fernandez, J. S.—Ocular hæmorrhage after cataract extraction.** (La hemorrhagia ocular despues de la operacion de la catarata.) *Anales de Oftalmologia*, Agosto, 1904.

*For abstract see THE OPHTHALMOSCOPE, Vol. III (1905), p. 618.

(2) Dupuy-Dutemps.—On Glaucoma consecutive to extraction of the crystalline lens. (Du Glaucome consécutif a l'extraction du cristallin.) *Annales d'oculistique*, T. CXXXII, p. 93, août, 1904, *and Bull. et Mém. de la Soc. française d'Ophtalmologie*, 1904, p. 440.

(3) De Obarrio.—An unusual reflex complication observed after cataract extraction. (Algunas observaciones acerca de un accidente reflejo especial que sobreviene despues de la operacion de la catarata.) *Anales de Oftalmologia*, Abril, 1905.

(4) Roper, A. C.—A case of double cataract extraction followed by glaucoma in both eyes. *Lancet*, June 17th, 1905.

(5) Clark, C. F.—Astigmatism after cataract extraction as modified by the conjunctival flap. *Ophthalmology*, July, 1905.

(6) Collins, E. Treacher.—A discussion on capsular complications after cataract extraction. *British Medical Journal*, August 26th, 1905.

(7) Burnett, Swan M.—An unusual form of exudate into the anterior chamber in iridocyclitis after cataract extraction. *American Journal of Ophthalmology*, August, 1905.

(8) Becker, H.--Hæmorrhage threatening life persisting four weeks after a cataract extraction. (Vier Wochen anhaltende lebensgefährliche Blutung in Gefolge von Alterstarausziehung.) Ophthalmological Society of Heidelberg, August, 1905, *ref.* in *Archiv für Augenheilkunde*, September, 1905, and *Archives of Ophthalmology*, November, 1905.

(9) Knapp, Hermann.—The lens-capsule in the operation of cataract. *American Journal of Ophthalmology*, September, 1905.

(10) Bruns, Henry Dickson.—Three unusual clinical observations: Change in astigmatism produced by chalazion; Contact keratitis after cataract extraction; Inherited and acquired syphilis in the same subject. *Ophthalmic Record*, September, 1905.

(11) Fernandez, Santos.—Opacities of the posterior layer of the capsule after cataract extraction. (Opacidades de la cristaloides posterior despues de la operacion de la catarata.) *Arch. de Oftal. Hisp.-Amer.*, October, 1905.

(12) **Collins, E. Treacher. — Capsular complications after cataract extraction.** *Royal London Ophthalmic Hospital Reports*, Vol. XVI, Part 3, October, 1905.

(1) **Fernandez** records a case in which hæmorrhage after an extraction almost entirely destroyed the sight of the affected eye. Some eleven years after it became necessary to remove the lens of the other eye; this was undertaken with apprehension, but the result was all that could be desired. In such cases the blood comes from the short ciliary arteries: this has been demonstrated by examination, but the cause of the rupture of the vessel is not so clear. Probably the chief factors are the arrangements of the arteries in the sclerotic, high arterial tension, and arterio-sclerosis. In such cases it has been proposed to adopt the old operation of couching. Fernandez thinks that in similar circumstances, he would probably make use of this method rather than risk extraction, provided he had in the meantime managed to acquire a suitable dexterity in its performance. HAROLD GRIMSDALE.

(2) **Dupuy-Dutemps** records a case of glaucoma, at first chronic but later sub-acute, which developed in an eye operated on ten years previously for high myopia by extraction of the lens and was cured by simple section of a capsular band which had become adherent to the cornea. He considers that glaucoma occurring some time after the operation in eyes from which the lenses have been removed, may be either primary or the direct but distant result of the intra-ocular changes due to the extraction, especially total irido-capsular adhesion, and incarceration of the iris or capsule in the corneal wound. R. J. COULTER.

(3) **Obarrio** has observed, after several cases of cataract extraction, a prolonged conjunctival injection which did not yield to the usual remedies. In the cases recorded, four in number, examination disclosed caries of the premolars, and their removal brought about (or, at least, was followed by) disappearance of the redness. The path of the reflex is through the Gasserian ganglion. HAROLD GRIMSDALE.

(5) In a brief article **Clark** considers that the factors that should be considered in studying the prevention of post-operative astigmatism are the following:—1. The proper location and character of the incision, whether with or without a conjunctival flap. 2. Accurate and immediate coaptation of the edges of the wound. 3. The absence of prolapse or incarceration of the iris. 4. The after-dressing and control of the patient. 5. The absence of those conditions, such as the retention of large amounts of cortex, which tend to produce increase of tension, if not pro-

lapse; and (6) combined or simple extraction. He justly says that if, with the section entirely in the line separating transparent corneal tissue from the limbus, and without, as Snellen has suggested, turning the knife backward in the upper portion of the limbus, we could obtain a well-formed conjunctival flap extending some eight or ten millimetres along the corneal margin and backward on the bulbar conjunctiva some three or four millimetres, we should have an ideal corneal section in a large measure free from the risk of prolapse of the iris and excessive post-operative astigmatism. C. A. O.

(6) A discussion took place on the capsular complications following cataract extraction at the annual meeting of the British Medical Association, held at Leicester in July, 1905. In opening the discussion **Collins** classified the complications under two headings:—I. Those resulting from adhesions between the capsule and the extraction scar, and II. Those resulting from opacity occurring in connection with it.

I.—*Complications resulting from Adhesion of the Lens Capsule to the Extraction Scar.*

The capsule may be (*a*) entangled in the extraction wound or (*b*) agglutinated to it by inflammatory exudate.

By far the most serious conditions arose from the first of these, for capsule lying in the wound delayed indefinitely the firm healing of the scar, acting as a foreign body. All the three cases in which he had met with this complication had severe iridocyclitis, and two of them had sympathetic inflammation in the fellow eye. Details of the clinical history and pathological appearances of the eyes were given. The sections in all the three cases showed thickening of the sclero-corneal tissue in the vicinity of the wound, due to the spacing out of the layers of fibrous tissue and some round-cell exudate between them. The conjunctival flap was elevated, due to cell infiltration beneath it and there was a large accumulation of cells surrounding the entangled capsule, with some giant cells. The delayed healing of the wound increased the liability of the eye becoming infected from the conjunctival sac.

A less serious condition was caused by adhesion of the capsule to the wound without its being actually incarcerated in it. Either or both ends of the divided capsule may become adherent. A simple agglutination does not delay the healing of the wound, but has a great tendency to draw the capsule and iris forward, and the more corneal the incision the more will the capsule be so displaced. Advance in the position of the iris tends to close the angle of the anterior chamber and to produce glaucoma.

The fact that an iridectomy has already been done might at first suggest that glaucoma could not be produced, but the angle

of the anterior chamber near the scar had invariably been found to be closed by a stump of the root of the iris or by the most anterior of the ciliary processes, which has been held or drawn forward by the adherent capsule. It is, however, by no means every case of adherent capsule that produces these disastrous results. Sometimes tension is not produced until after a needling, due to a fresh adhesion of capsule to the needle puncture or to congestion of the ciliary processes.

The next points for discussion were:

(*a*) How the complications could be avoided.

(*b*) What could be done to remedy the conditions when giving rise to trouble.

The operation of extraction without iridectomy was less liable to lead to adhesion of the capsule to the wound than if an iridectomy were done; however, neither was completely free from the risk, and in one case the author had seen the anterior hyaloid membrane of the vitreous become adherent in a case in which the lens was removed in its capsule without iridectomy; this drew the iris forward and caused glaucoma.

If a piece of anterior capsule be torn away with forceps, this risk of adhesion is less than if it be only incised with a cystotome, but the adhesion of the peripheral portion of the capsule is still possible.

Sclerotomy, paracentesis, and needling of capsule have all been tried for the relief of tension, but they nearly always fail, for the angle of the chamber remains blocked as before. An iridectomy, if performed on the opposite side to the first one, may open up the angle, but is not certain of doing so, and leaves an unsightly pupil.

In two cases the author had been able to relieve the tension by dividing the capsule in the same way as an anterior synechia of the iris is divided with Lang's knives.

II.—*Complications resulting from Opacity occurring in connection with the Lens Capsule after Extraction.*

There are three causes which lead to this condition:

(*a*) Retained lens substance.

(*b*) Wrinkling of the anterior capsule with new growth of cells lining it.

(*c*) Adventitious fibrous tissue.

The most efficient way to prevent the first two is to tear away the anterior capsule with a pair of capsule forceps instead of simply incising it with a cystitome, as is the more common practice. The development of adventitious fibrous tissue is usually the result of irido-cyclitis, or sometimes organization of a blood-clot on the capsule may produce it.

In 1899 the author determined to remove the anterior capsule in 100 cases of uncomplicated senile cataract with forceps, and to compare these results with those in which the capsule was simply incised. As a rule, he considered needling necessary when the vision was below $\frac{6}{18}$.

Of his first 100 cases in which the forceps were used, only 15 required subsequent needling, and no case required a second needling; while in the second series of 100 cases, four only required needling, and a period of two years has now elapsed since this second series was completed. As the result of this experience of this method of removing the anterior capsule, he found 25 per cent. of his cases got full vision $= \frac{6}{6}$ with only the single operation; he much doubted if any other procedure would produce such good results.

The discussion that followed the reading of Collins's communication was remarkable only for the conservatism of the opinions expressed by most of the speakers. **Berry** (President of the Section) advocated the routine employment of the repositor, in order to prevent incarceration of capsule in the corneal wound. The making of a conjuctival flap, he thought, was of service in preventing exogenous microbic invasions. In needling for an after-cataract he invariably selected a point for puncturing the cornea away from the site of the original wound. He was frequently in the habit of withdrawing opaque capsule from the eye by means of forceps. He formerly used forceps instead of cystitome for rupturing the capsule. **Bronner** thought the use of forceps for rupturing the capsule was not unattended by danger. In his experience, capsular complications were much less frequent in extraction without than with iridectomy. **J. T. Thompson** advocated irrigating the anterior chamber with saline solution after extraction of cataract. **Hern** had performed paracentesis in the few cases that had fallen under his notice of glaucoma after extraction of cataract. S.S.

(7) The case seen by **Burnett** was that of a German, 61 years of age, who had a mature cataract in the left eye. The eye was clear, the anterior chamber good, the iris freely responsive to light stimulus, and intraocular tension normal.

An operation for simple extraction was done under strictly aseptic conditions. The procedure was smooth, the lens being delivered without trouble, and the iris promptly returned by a little coaxing; a small amount of cortical matter only remained behind. The pupil was central and round when the dressing—a simple one, held in position by adhesive strips—was applied.

On the third day, when the dressing was changed, the anterior chamber was found to be well filled, the pupil was central and round, and there was no pain. There was but a

slight bulbar injection. Atropine was applied. The case progressed normally until the ninth day, when, rather suddenly, pain set in. When seen a few hours later, there was considerable injection of the eyeball, with some chemosis of the conjunctiva and lids. In addition to the atropine, hot applications were ordered to be applied every four hours. The symptoms increased in intensity until the eleventh day, when a small line of gray deposit was observed at the bottom of the anterior chamber. The pupil still remained of medium size, but appeared hazy, and the anterior chamber was rather muddy. In addition to the local treatment by atropine and hot applications, dionin in five per cent. solution was used every other day. In spite of this, the exudate increased, until on the eighteenth day the mass had reached the pupil, and had assumed a pyramidal form. By this time, the pain had much diminished, but the injection of the eyeball was considerable and lacrymation profuse. The pupil was still of good size, and except at its outer edge, was clearly defined. The inner portion of the iris presented a very good surface appearance, while the outer part, next to the pupillary opening, was swollen and its rugæ were indistinct. At the top and the outer edge of the pyramidal mass, and on the iris at its upper portion near the pupil, there were fine streaks of blood arranged in an irregular manner. These bore a strong resemblance to blood vessels, but examination under a magnifier showed them to consist of extravasated blood lying on the iris surface. There was but a slight amount of pain, although the bulbar injection was still marked. Treatment by atropine, hot applications, and dionin was continued. In a day or two the mass began to diminish in size from below. The iris tissue, except that near the outer edge of the pupil, was of quite a normal appearance. The blood streaks had become changed, both as to their arrangement and position. By the twenty-fourth day the mass was still further reduced in size from below, its edges being sharply defined. The pupillary edge of the iris, except at the outer part, was quite distinct, and the blood streaks were more widely diffused over the iridic surface, being especially pronounced below and outward. On the twenty-sixth day the exudate was found to be confined to the pupillary opening with a small cone with sharp edges projecting into the anterior chamber. The streaks of blood were limited to the upper part of the pupil. The outer part of the iris was still clearing. In about a month's time the exudate had disappeared, except in the pupil itself, and on this remaining portion there were three thin streaks of blood. The iris had assumed a normal appearance, except at the outer pupillary edge, where it seemed

slightly swollen. The pupil as a whole was adherent to the remains of the capsule, but was only slightly smaller than what it was at the onset of the disease. The contraction of the pupillary space continued until, three days later, it showed "two fine blood streaks running vertically down from the iris periphery to the pupillary edge with a small blood streak on the pupillary space itself."

A week later, there still remained a single streak of blood running down over the iris surface from above. The pupil was still further contracted. The eye was free from injection. Intraocular tension was normal, and there was good light projection, although light perception was limited to the recognition of moving objects.

About two months after the operation, an iritomy was done, the incision—some five millimetres in length—being made with de Wecker's *pince-ciseaux* through the pupil from without inward. The incision opened only to the extent of about one and five-tenths millimetres, owing to the thickness and the toughness of the exudate which was back of the iris.

Although great care was taken to prevent it, there was a recrudescence of the iridocyclitis, but without the appearance of any mass of exudate as before, beginning on the fifth day after the second operation. This subsided in about two weeks' time, leaving a complete closure of the artificial pupil.

About five weeks after this, another attempt was made to secure a permanent artificial opening in the iris, the incision this time being made below the pupil, and in what was believed to be a normal part of the iris. No excessive reaction followed this procedure, and an oval opening, some three millimetres in its largest diameter, was obtained, and has since remained clear. The vitreous humor gradually cleared, and the final vision, when the patient was discharged some three weeks later, equalled 5/20, with a + S. 8 D.⌒ + C. 4.D. ax. 75°.

It is interesting, the author says, "to note that the astigmia is, according to the rule, quite the contrary to what is usually found after normal cataract extraction where the axis of the correcting plus cylinder, almost without exception, approaches the horizontal." He says that this is the more noteworthy when we know that the cornea before the operation showed, under ophthalmometric examination, no astigmatism at all. This departure from the customary condition after cataract extraction, he thinks, we can "properly refer to the change in the curve in the cornea brought about by the contraction of the exudate behind the iris in such a manner as to increase the curvature of the vertical meridian."

The foregoing case, he believes, "falls in its more general

characteristics under the classification of the 'spongy' exudates, but there are some points of departure from this form as usually observed which render it worthy of consideration." In every previous instance he has seen, the exudate has come on with comparative suddenness, the anterior chamber being filled in the course of a few hours, and its disappearance effected in only a few days' time at most. In this case the exudate took place slowly, commencing as an apparently typical hypopyon, which, at first sight, he believed, would have led one to fear a suppurative form of inflammation, and while circumscribed rather indefinitely at the beginning, at no time did it fill the anterior chamber completely. Its later progress, however, was typical of the course of the spongy exudate, though much more chronic in its progress. The disappearance of the mass was from the periphery towards the centre, and the edge was sharply defined, while the anterior iridic surface had an almost normal appearance. He says that this is the first time that he has seen a blood extravasation as a complication of acute inflammation of the anterior portion of the uveal tract with the spongy exudate. He has seen it, however, in the plastic form. On these occasions, he states, the quantity of blood has been much greater, filling, in one case, the lower half of the anterior chamber. The shifting character of the blood streaks, he believes, is also not without its interest. The inflammation, he is inclined to think, was largely situated in the ciliary body at the upper and outer portion, the exudate being poured through the pupil into the anterior chamber. The iris itself seems to have participated only to a limited extent, if one "may judge by the large size of the pupil and general appearance of its surface, maintained up to the time when the contraction of the exudate on the capsule and posterior surface of the iris drew it together." As revealed by the iritomy, the lower portion of the iris was but slightly affected. C. A. O.

(8) A ripe senile cataract was extracted on October 10th, 1903, from the right eye of a man seventy years of age, who had no demonstrable general arterio-sclerosis or hæmorrhagic diathesis, no albumen or sugar in his urine, and no myopia, syphilis, or signs of glaucoma. The bleeding began the moment the iris was seized with the forceps for the purpose of performing iridectomy. The hæmorrhage was mainly arterial, and in spite of bandaging, rest, ice, gelatine, etc., persisted for five days. At the end of that time the eyeball was eviscerated, because life was placed in jeopardy. Three days later, when the iodoform tampon that had been placed in the scleral cavity was removed, pulsatile bleeding again set in. Pacquelin's cautery was applied to the central artery, the scleral cavity packed, and the sclera united

over the tampon. The hæmorrhage was finally checked on November 10th, 1903, after Merck's sterile gelatine dropped into the scleral cavity had hardened—exactly one month after the cataract operation. **Becker** thinks that the cause of the prolonged and dangerous bleeding must be sought in a local arterio-sclerosis of the carotid artery and its branches, especially the ophthalmic artery and its twigs to the iris and the central artery of the retina.

(9) Three recent publications determined **Knapp** to accept an invitation to read a paper upon this subject before the Academy of Ophthalmology and Oto-Laryngology. "The first is a remarkable and important discussion on 'Capsular Complications after Cataract Extractions,' at the Ophthalmic Section of the British Medical Association, August 26th, 1905, in the *British Medical Journal*, *p.* 433. The discussion was introduced by E. Treacher Collins."*

"The *Journal* (he informs us), has only an abstract of the paper, which deals with the difficulties that are caused through the lens capsule, under two heads: I. By entering into the section wound, where it retards the closure of the wound and induces the most deleterious consequences, first causing an uneven, irritable scar, which draws the iris into its proliferating intumescence, develops into kerato-irido-cyclitis, and finally into a chronic sero-plastic uveitis, ending not only in the blindness of the operated eye, but also of the other by sympathetic ophthalmitis; II. By opacifying *in loco*." Collins, the author states, "grounded his remarks on specimens of three cases of severe irido-cyclitis, of which two had degenerated into sympathetic inflammations of the fellow eye." In all three the sections showed thickening of the sclero-corneal tissues in the vicinity of the wound by infiltration with round-cell exudate. The conjunctival flap was elevated, due to the cell infiltration beneath it, and there was a large accumulation of cells surrounding the entire capsule, with some giant cells. The simple agglutination of the capsule into the wound, he tells us, "is frequent, and produces only a mild irritation with slight thickening of its site." It may give rise to glaucoma by drawing the iris forward, and occupying the angle. "In almost all cases of combined extraction, adhesions of the iris stump to the scar have been found in the eyes that have been examined under the microscope (O. Becker). These adhesions drag also the adjacent apices of the ciliary processes into the common scar—a swampy gutter, filled with pabulum for those foulest parasites so eagerly hunted and never caught."

"How is this condition to be avoided, if it cannot

*For abstract see above (No. 6).—EDITORS.

be cured? It is well known—and the late Professor Arlt, one of the best-known cataract operators, told me (Knapp states) so forty years ago—that sympathetic ophthalmia is much rarer in simple flap operations than in Graefe's method. I can confirm this." Knapp says that when he made the old flap extraction he lost cases by infection, "but none that drew the fellow eye into this awful calamity." During Knapp's practice in New York he remembers two cases of loss by sympathetic irido-choroiditis after Graefe's operation. One, he tells us, "has remained vividly in my memory because the most unfortunate consequences followed the operation. At that time I made a miscellaneous division of the centre of the capsule, 'scratching,' say our fellow eye surgeons on the other side of the ocean. There were little cataract remnants, capsule shreds, and probably also some iris in one small deposit near one of the angles of the section. The old gentleman, gouty and debilitated, suffered a great deal. He was visited daily by his wife and daughter, who were much distressed. I treated him very carefully. He was a good patient, and was six to eight weeks in the hospital; but when he felt certain that he would remain blind in both eyes, he drowned himself in his bath tub." Since Knapp has adopted the method of opening the capsule peripherally, and parallel to the corneal section, and omitting the iridectomy, he has seen no trace of sympathetic ophthalmia.

Knapp tells us that when this peripheral opening is correctly done, he has prolapses of the iris, which he cuts as soon as he sees them—that is, the day after the night in which they occur. "This is mostly in the first night."

He speaks of Major Herbert's criticism of his "peripheric splitting." Herbert "made light of it, saying that this splitting of the upper border of the lens behind the iris, where we cannot see what we do and the lens will escape with great difficulty, condemns it at once." Knapp reviewed Major Herbert's book, and "recommended it earnestly and heartily, because it contains many very practical hints and advices, rules which the orthodox text-books ignore. In cataract operation, the least technical trifle that serves a point ever so small should be duly appreciated." He says that in his review of Major Herbert's monograph, with all the just praise, he had to take exception to the author's manner of opening the capsule, which is by a vertical slit from the lower point of the dilated pupil to the upper. He says that "this is the capsule opening I knew long ago. I do not criticise it by deductive argument, but by dry and hard experience. von Graefe, my teacher, did that splitting during my studies in his hospital. At that time I was not quite a tyro in ophthalmology;

among my apprenticeships I could count a year in London at the old Moorfields with Bowman, Critchett, and others, where I seldom missed a day."

Knapp believes that "the vertical splitting is unfavourable for the exit of the lens; the horizontal, parallel to the corneal section, offers its easiest escape. The iris is no appreciative hindrance. The next and worst drawback of the vertical splitting is that it produces a more or less dense scar, which is much in the way of the light and which is very unpleasant to divide by a later capsulotomy. Graefe made not only a vertical split in the capsule, but also a horizontal one at the periphery of the coloboma. He opened the capsule horizontally in the upper part with a cystitome, which he then turned and with it ripped the capsule from below upward to meet the horizontal incision. In this way he obtained a broad, T-shaped opening, which did not always remain large enough, and my imitation of this procedure in Heidelberg and New York proved no more obliging." The peripheric single opening, Knapp says, "leaves a fine scar near the upper margin of the capsule. The latter is left intact in all the other parts, and is most favourable for a secondary splitting with a sharp, well-proportioned knife-needle. The opening, crucial or T-shaped, remains almost always permanent." Every now and then some of his patients who have been operated that way fifteen to twenty-five years ago come to show him their eyes. "They are ideal, *i.e.*, no disfigurement at all, clear, black pupil, T. and S. normal, and the patients say they never have any trouble with their sight."

Knapp considers two other modes of opening the capsule. "The older one is to 'scratch' the centre of the anterior capsule in different directions with a cystitome, curved needle, or fine hook." This was the general method of Arlt, in Vienna, and many others forty to seventy-five years ago, and it is still practised by many competent operators. Years ago, he says, "I went through the eye clinic in Vienna, where Prof. Arlt showed me one of his patients. He had often been in my clinic at Heidelberg, and at times he performed some cataract extractions when he was asked by the members of the German Ophthalmic Society at the yearly conventions. I showed his cases with peripheric capsule opening, and told him that this was a feature of the cataract operation, because it was almost always free from synechiæ. He said he had none either after central and miscellaneous discission. I expressed my doubt. He said, "I shall convince you if you come to Vienna again." It was not long after that I went to Vienna, and he showed me all the cases operated and asked me to inspect the pupils with oblique light myself. I did so, and told him: "There is no free pupil;

all have fine adhesions." "Oh, yes," he replied, "Those are delicate agglutinations, not inflammatory products. They do not impair the sight, and signify nothing." I soon detected the cause of these innocent agglutinations. In watching the passage of the cataract through the narrow pupillary area, I saw small ruptures at the border of the pupil. They were little angular ruptures, well visible so long as the white lens was their background. As soon as the lens is cut they contract and cannot be seen any more. In some eyes there are no adhesions, but many show the small synechiæ. Their creation, so far as I can explain it, is as follows. When the capsule is ruptured miscellaneously, its small shreds come in contact with the tiny, irregular ruptures of the iris and agglutinate. When the capsule is incised away from any rupture of the sphincter portion of the lens, the two wounds do not meet, but close separately. When in a month or later the capsule is discinded with the knife-needle, the shreds of the capsule do not touch a ruptured place, and the pupil remains with very few or no synechiæ, constituting an ideal pupil."

The next mode of opening the capsule, Knapp says, "is to tear a central leaflet from the anterior capsule. This mode is very commendable. About five years ago, on a journey from Egypt to Vienna, he stopped in Buda-Pesth and visited the University Eye Clinic, which at the time was in the care of Professor Schuleck. He knew from Schuleck's publications and hearsay that he was an excellent operator. In the Hospital there were about a dozen patients who had been operated upon for cataract. Schuleck showed Knapp all of them, let him examine them himself, and operated by Graefe's combined extraction upon two patients before him. The operations were without accident, and the patients previously operated on were in the best way of recovery.

When the combined extraction had become popular, and the author had in Heidelberg a fairly large opportunity of operating for cataract, he saw that the capsule was the most difficult factor in the procedure. He tells us that in one of the periodical statistical reports of his cataract operations, he said, "The man who invents a safe method of removing the central part of the anterior capsule will be the greatest benefactor of the hosts of countless old blind people." He states that if in the combined operation the capsule is removed, success is almost certain, provided there are no complications on the part of the eye and no coarse technical faults. Yet he believes that there are also difficulties in the removal of the central part of the anterior capsule. "It is mostly done with a capsule forceps, the teeth of which are sharp and bent somewhat backward. The accidents

to which this is open are chiefly the dislocation of the lens with prolapse of the vitreous and its consequences. Hard capsules do not yield, so that the whole cataract comes out with the capsule, which as a rule gives excellent results." Professor Fuchs in Vienna, he informs us, is a great advocate of this method.

Another drawback inherent to this method, he asserts, is the necessity of an excision of a piece of iris; "otherwise it is too hazardous to manipulate in the narrow pupillary space." He devised (about twenty years ago) a peculiar capsule forceps according to the principle of the nautical grapple-hook. "When the branches of the forceps are opened their claws are directed obliquely towards the capsule, and when the forceps closes it grasps the central part of the capsule and removes it, when it is withdrawn." He has not used this forceps so much as he might have. "The reason was that the tearing of this piece of capsule may dislocate the lens, and leads to prolapse of vitreous when the lens is expelled. Apart from that it produces not a permanent clear way for the passage of the rays of light, as the posterior capsule will opacify, too, by wrinkling and dotting, so that patients who had very good sight in the first three to six months, notice, without pain or discomfort, a gradual deterioration of sight, which, however, can be permanently corrected by a second discission." C. A. O.

(10) The three observations described by **Bruns** are of great interest. The first was that of a series of axial and gradatory changes of astigmia, produced by a chalazion of about three or four millimetres in diameter, situated in the upper lid of the right eye. With a gradual disappearance of the inflammatory mass, "vision for near became clear and comfortable with the old correction."

The second was that of two cases of contact keratitis after cataract extraction. Both lenses were removed by the simple method without any complication, except "an almost invisible nicking of the iris in completing the section" in the first case. Both patients were "ill-nourished, anæmic, weak—old for their ages." Two days after the operation in the first case, a small area of interstitial infiltration, about three millimetres by six millimetres in size and resembling an old leucoma, appeared "about the centre of the cornea." The patient was restless, and the anterior chamber was unclosed. A week after the procedure the anterior chamber was re-established. The capsular remains were broken up. The pupil was dilated under atropine. The leucoma-like spot had become thinner, and had assumed "the appearance of a surgical keratitis (striped infiltration)." This area was "surrounded by a large, clear zone, extending on all sides to the corneal limbus." A triangular bit of capsule could

be "seen to be in contact by its apex with the posterior surface of the cornea opposite the area of infiltration." Upon the fourteenth day after the operation the cornea was clear, and the patient was allowed "to go home wearing cataract cages." In the second case the dressing was the same as that which was employed in the first. Upon the second day it was observed that the pupil which had been dilated by atropine the day before showed a slight tendency to contraction. In eight days' time the eye was quiet, and the pupil, which was clear, was one-half contracted. There was not any entanglement of the iris. The anterior chamber was not reformed. Three days later the bandage was removed, and cataract cages were employed. The next day a small area of infiltration occupied the centre of the cornea. Two days after this the leucoma-like spot became "surrounded by a grey zone of delicate infiltration, in its turn embraced by a wide area of clear cornea, extending on all sides to the corneal margin." Fine strands of capsule could be seen "running from every point of the pupil's circumference to an area on the posterior surface of the cornea exactly behind the opacity." To ordinary inspection the pupil seemed almost perfectly black and clear. The wound was healed, and the anterior chamber was restored. Twelve days later the cornea was "perfectly clear," the leucoma-like spot having "first assumed throughout the appearance of a grey infiltration and then gradually faded away." The author states that a most painstaking examination of the latter case on the eighth day gave the clue to the cause, and further study of the first one "revealed a similar condition." Being fully cognizant of the well-known fact that prolonged contact of any foreign body against the posterior surface of the cornea may give rise to an opacity of that membrane, he believes that the leaking wounds in his two cases had evidently afforded a chance for shreds of capsule to act in such a way.

The rarity of instances of inherited and acquired syphilis in the same subject, the author tells us, is sufficient excuse for the publication of the third observation—the case of a twenty-three year old negro, who with all of the facial stigmata of inherited syphilis, presented gummy infiltrates in each iris with many small posterior synechiæ and "classical, parenchymatous, punctate keratitis." The forehead and the forearms of the subject "were found covered with a papular syphilide." C. A. O.

(11) **Fernandez** seems to have been singularly unfortunate when he has had to deal with opacities of the posterior capsule after extraction. In four cases the operation of needling was followed by detachment of the retina and total loss of vision. He therefore entirely abandoned all attempt to relieve the

condition. Lately he has been compelled by the exigencies of certain patients to resume operations, and has had good results by dividing the capsule by means of a narrow Graefe knife.

HAROLD GRIMSDALE.

(12) The complications which may arise after extraction of cataract, in connection with the capsule, were fully discussed by **Collins** at a discussion opened by him at the Leicester meeting of the British Medical Association, 1905. The paper he then read, which has previously been abstracted (*see* above No 6), is here published in full, together with illustrations. C. D. M.

IX.—MISCELLANEOUS COMMUNICATIONS DEALING WITH CATARACT.

(1) **Keiper, George F.—Complete absorption of an injured crystalline lens in a man forty-six years old.** *Ophthalmic Record*, August, 1903.

(2) **Szily, A. v.—Lenses with double focus.** (Die Linse mit zweifachem Brennpunkt.) *Klin. Monatsbl. f. Augen.*, 1903, Band II, p. 44.

(3) **Dunn, Percy.—A case of subacute glaucoma caused by a hypermature cataractous lens.** *West London Medical Journal*, January, 1904.

(4) **Menacho.—On the necessity for retaining the bandage after operations upon the eye.** (Sobre la supresion del vendaje en las operaciones del globo ocular.) *Arch. de Oftal. Hispano-Americanos*, Junio, 1904.

(5) **Lacaussade. — The differential diagnosis between cataract and glaucoma.** (Cataracte et glaucome diagnostic différentiel.) *L'Ophtalmologie Provinciale*, août, 1904.

(6) **Hartridge, Gustavus. — Unusual opacity affecting the posterior part of the lens and capsule.** *Trans. Ophthal. Society*, Vol. XXIV (1904), p. 85.

(7) **Dransart.—On cataract in its relations with blindness in the North of France.** (De la Cataracte dans ses rapports avec le cécité dans le Nord de la France.) *L'Ophtalmologie Provinciale*, novembre, 1904.

(8) **Schanz, F.—On the acquisition of the power of seeing in people born blind and later successfully operated upon.** (Ueber des Sehenlernen blindgeborener und später mit Erfolg operierter Menschen.) *Zeitschrift für Augenheilkunde*, Dezember, 1904.

(9) **Wicherkiewickz.**—On the open treatment after cataract operations. (Sur le traitement à ciel ouvert des opérés de la cataracte.) *L'Ophtalmologie provinciale*, janvier, 1905.

(10) **Roure.** — Two cases of ossification of the lens. (Deux cas d'ossification du cristallin.) *Revue générale d'ophtalmologie*, février, 1905.

(10A) **De Wecker.**—New attempts to cure cataract without operation. (Nouveaux essais pour guérir la cataracte sans opération.) *Annales d'oculistique*, T. CXXXIII, p. 161, mars, 1905.

(10B) **Vinsonneau.** — What should be done in cases of diabetic cataract? (De la conduite à tenir dans la cataracte diabétique.) *Le Petit Indépendant Méd.*, février, 1905, and *Revue générale d'ophtalmologie*, juin, 1905.

(11) **Fisher, J. Herbert.** — Coralliform cataract. *Trans. Ophthalmological Society*, Vol. XXV (1905), p. 90.

(12) **Mayou, M. S.**—An unusual form of lamellar cataract. *Trans. Ophthalmological Society*, Vol. XXV (1905), p. 90.

(12A) **Bargy.**—A case of bilateral coloboma of the iris, with double cataract and high myopia. (Un cas de coloboma bilatéral de l'iris avec cataracte pyramidale double et myopie forte.) *Ann. d'oculistique*, T. CXXXIV, p. 285, octobre, 1905.

(13) **Méo, J.**—A contribution to the study of arterial pressure in cataract. (Contribution à l'étude de la tension arterielle dans la cataracte.) *Thèse de Toulouse*, 1905, and *Rev. générale d'Ophtalmologie*, décembre, 1905.

(14) **Theobald.**—The success which at the present day attends the operation of cataract extraction, and the causes that contribute to it. *American Journal Med. Science*, January, 1906, p. 26.

(2) In sixteen cases observed by this writer, monocular anisometropia occurred in the course of formation of cataract, *i.e.*, an optical differentiation of the refraction of the nucleus of the lens from the outer layers. **Szily** also refers to lenticonus posterior, of which he quotes descriptions of thirteen cases. The reason of the refractive anomaly lies in an increase of refractive power of the lens nucleus, not in a diminution of that of the outer layers, which retain their former refraction. The work is well worth reading in the original. (*See* THE OPHTHALMOSCOPE, Vol. I (1903), p. 61.) A. BIRCH-HIRSCHFELD.

(3) **Dunn's** case was that of a woman, aged 88 years, who had for long suffered from cataract in the left eye only, the right

being good. She had lately complained of symptoms pointing to glaucoma in the left. 14 days before being seen the left became acutely painful, and on admission the tension was +2 and the eye was in a state of acute glaucoma. Eserine brought the tension down somewhat, but a few days later iridectomy was done and the lens removed with a scoop. There was no loss of vitreous, and 3 months later the vision was 6/12 and J. 4 with correction. The right, but for slight lenticular opacities, remained normal. C. D. M.

(4) **Menacho** comes to the following conclusions: that the objects of a bandage are three in number, *viz.*, protection, occlusion, and compression of the eye. That a bandage is always called for in an eye with increased tension, so as to exercise pressure. That if there is much conjunctival discharge the bandage must be changed frequently. Lastly, that in needling for after-cataract, where the existence of a discharge makes an accident not improbable, it is well to dispense with the bandage, and to bathe the eye every hour for the first day or two after operation. HAROLD GRIMSDALE.

(6) In a patient, aged 54 years, **Hartridge** found a number of opacities radiating from the posterior pole of one lens. They suggested folds in the posterior capsule of the lens rather than opacities of the posterior part of the cortex of the lens. Details of fundus not visible. V. = 2/60.

(7) **Dransart** discusses the etiology and treatment of spontaneous and traumatic cataract. When necessary he operates on immature cases removing the cortex by aspiration and irrigation. He has tried Badal's method of treating incipient cataract with lotions and drops of iodide of potassium and has obtained inconclusive results, although there has been improvement in some cases. He considers that the development of cataract is frequently connected with a default of nutritive activity characterised by hyposecretion of urea, and that it may also be favoured by wearing faulty glasses. He calls attention to the fact that slight blows on the eye may be followed in 5 to 8 months by concussion cataract, and urges that such injuries should be very carefully treated.

R. J. COULTER.

(8) **Schanz** reports a most interesting case of operation for bilateral congenital cataract in a patient, 6 years of age. Previous to the operation the patient could tell only light from darkness. The operation, done on both eyes, consisted in splitting the opaque membrane. After the bandages were removed the sense of vision rapidly developed, and the boy was able to find his way about very soon. The peripheral parts of the field remained defective during the time of observation, and he was rather slow to learn to identify objects by simply looking at

them. These cases ought to be operated on early, within the first year, otherwise nystagmus develops, which the operation does not remove. A. LEVY.

(9) **Wicherkiewickz** has treated 402 cases of cataract by a modification of Hjort's method. In place of leaving the eye quite open, he covers it with a piece of stiff brown paper which is gummed to the brow, temple, nose, and cheek, but leaves the eyelids quite free. He considers that this (1) protects the eye from dust, bacteria, etc., without pressing on it or interfering with the normal flow of tears; (2) prevents the patient from rubbing or using his eye; (3) shows by getting damp if there is any irritation causing lacrymation. He states that under his new treatment the percentage of bad results has been reduced, convalescence has been more rapid, and such accidents as hæmorrhage from the iris, delayed closure of the wound, and detachment of the choroid have been less frequent. He thinks that cases in which there is conjunctivitis which will not yield to treatment can be operated on more safely if they are treated by the open method than if the discharge is confined to the eye by a pad and bandage. R. J. COULTER.

(10) **Roure** adds two cases to those already published of ossification of the lens. In the first case, a child of twelve years, the exact nature of the cataract had not been suspected, and an attempt was made to remove it by linear incision. It was supposed that the capsule only was calcified. As the result of attempts to penetrate the capsule the cataract became dislocated into the anterior chamber, and was with some difficulty removed after enlarging the wound. The cataract, when examined, was found to be stony hard, had the infantile shape, and was composed largely of phosphates. Bone corpuscles existed in the parts corresponding to capsule and lens. The fundus of the aphacic eye gave a yellowish reflection, due, in the author's opinion, to almost complete ossification of the choroid. In the second patient aged sixteen, the eye was removed. The choroid and lens were both ossified. A bibliography is appended.

ERNEST THOMSON.

(10A) **De Wecker** considers that in many cases cataract is associated with a defect of nutritive activity characterised by a diminished excretion of urea, and advises that patients threatened with cataract should, in addition to wearing suitable glasses, have their urine tested for deficiency in the amount of urea, or of chlorides contained in it, and, above all, for the presence of sugar, and that appropriate treatment should be adopted for any abnormality found. With regard to the possibility of checking the development of a cataract which is already established, by the use of lotions or drops of iodide of potassium, he points out that it is

impossible to come to any definite conclusion on the subject, as a cataract may, without treatment, remain for many years without getting worse. Dealing with the recent attempts to cause incipient cataracts to retrograde and to disappear, although he has not sufficient evidence to justify him in speaking positively on the subject, he thinks it worth while to try a course of twenty intra-capsular injections at intervals of 2 or 3 days each, consisting of $\frac{1}{2}$-cubic centimetre of a 5% solution of iodide of potassium, to which a drop or two of a 1% solution of acoin, or a 2% solution of cocain should be added to prevent pain. The progress of the cataract should be estimated not only by the ophthalmoscope and test types, but by some subjective method, such as that suggested by Darier, which consists in getting the patient to look at a candle flame about 5 metres from him through a biconcave lens of 30-40 D., when he sees a luminous disc, on which even the smallest opacities of the lens are shewn up, so that he can judge whether they are increasing or decreasing.

R. J. COULTER.

(10B) **Vinsonneau** maintains that the prognosis in diabetic cataract is good both as regards operation and sight. It should be, therefore, treated on the same lines as simple cataract. But before operation it is advisable to place the patient on anti-diabetic treatment, and to apply a "test dressing" the night before the cataract is removed. As regards the operation itself, the author lays stress upon the importance of iridectomy, and the necessity for not dragging upon the iris, nor using force in getting rid of cortical remains. E. R.

(12A) **Bargy's** patient, a girl, aged 8 years, had the following anomalies in each eye:—(1) Coloboma of the iris downwards and inwards as wide as the pupil at the pupillary edge and involving almost a quarter of the circumference of the iris at its scleral insertion; (2) Flattening of the lens margin with atrophy of the ciliary processes in the region of the coloboma; (3) Anterior pyramidal cataract; (4) Iridodonesis; (5) Refraction estimated at —27 D. through the lens and +14 D. through the circumlental space and coloboma. In the left eye there was also a pigmented temporal myopic crescent. R. J. COULTER.

(13) **Méo** shows that one may often find amongst persons suffering from cataract some of the signs looked upon as characteristic of arterio-sclerosis. At the same time it is far from proved that senile arterio-sclerosis may be ranked as one of the causes of lenticular opacity. Among 56 cases of senile cataract Méo found tension above the normal in four cases only, and sometimes the tension in these patients was lower than that observed in veritable arterio-sclerosis. It may be concluded from the 56 observations that cataract cannot

be attributed to generalised arterio-sclerosis. From a practical standpoint, however, the study of arterial tension is useful in cases of cataract, since raised pressure may be the forerunner of operative or post-operative accidents, such as intra-ocular hæmorrhage. COLIN.

(14) During the first half of last century, surgeons were well content if failures in their flap operations for cataract did not exceed 20%, but after the introduction of v. Graefe's operation, a definite improvement occurred, although 8% to 10% of failures was not uncommon. Now, the rule is 4% to 5% only.

In a compilation of the results of over 2,000 cataract operations by well-known ophthalmic surgeons of this country and of Europe, made by Frank M. Ring (*Med. Record*, Feb. 23rd, 1895), about half the operations having been done with iridectomy and about half without, the percentage of failures was 3·67. **Theobald**, in a series of 200 cases, had a percentage of failures of 3·12.

The cause of this greatest success is found primarily in the improved method of operating for senile cataract introduced by v. Graefe, the combined extraction of the present day being the outcome of his modified linear extraction. Next in importance comes Koller's discovery, in 1884, of the anæsthetic action of cocaine. This is of greater importance than the application of the principles of antiseptic surgery to cataract operations, inasmuch as absolute asepsis is practically impossible, the incisions are small, the hands of the operator do not necessarily come in contact with the wound, the ocular tissues are very vascular, and furnish no dead spaces suitable to the development of bacteria, and, finally, the tears are measurably bactericidal. Other factors producing the improvement are skilled nursing, improved hospital facilities, prevention of post-operative accidents by the late Russell Murdoch's protection shield, Ring's and Emerson's masks, &c., and more definite specialisation of eye surgery.

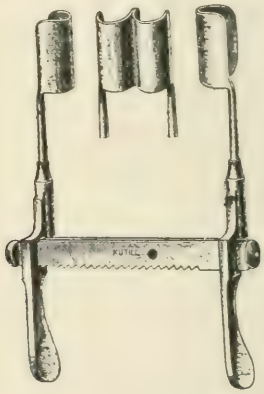
The causes leading to the failures which still remain, for in spite of all efforts 2% of cases after cataract operation are lost by pyogenic infection, are that many cataract eyes are unsound in other resepcts, and therefore cannot withstand the shock of the operation. Then, the subjects are often old, and of these 1% are glycosuric, 6% are albuminuric, and a much larger proportion have atheromatous arteries. The temperament of the patient is also a very significant factor in producing success or failure. A tractable patient can help the operator considerably and *vice versa*. ROSA FORD.

X.—INSTRUMENTS.

(1) **Müller, Leopold.—A lid speculum. (Ein Lidsperrer.)** *Klin. Monatsbl. f. Augenheilkunde*, September, 1905.

(2) **Maddox, Ernest E.—Needles for suture of the conjunctival flap after cataract extraction.** *Trans. Ophthalmological Society*, Vol. XXV (1905), p. 304.

(1) For upwards of ten years **Müller**, fearing loss of vitreous, has operated upon senile cataract without a speculum. Yet aseptic considerations suggest that some such instrument should be employed. Müller has therefore devised a speculum (shown open and closed in the illustration), which falls out from between



the eyelids as soon as the patient makes any straining movement.

S. S.

(2) **Maddox**, who has experimented in the direction of suturing the conjunctiva after extraction of cataract, has had some small, strongly-curved needles made for the purpose. He finds that post-operative astigmatism is increased if too much conjunctiva be included in the suture.

XI.—LOCAL ANÆSTHETICS.

(1) **Barcones.—Stovain. (Contribucion al estudio clinico de la estovaina.)** *Arch. de Oftal. Hisp.-Amer.*, Oct., 1905.

(2) **Santos, Fernandez.—Stovain. (La estovaina en nuestra practica oftalmologica.)** *Arch. de Oftal. Hisp.-Americanos*, October, 1905, and *Anales de Oftal*, May, 1905.

(3) **Hummelsheim, Ed.**—Upon the action of Alypin, a new anæsthetic, upon the eye. (Ueber die Wirkung des Alypin, eines neuen Anästheticums, auf das Auge.) *Archiv f. Augenheilkunde*, Oktober, 1905.

(3A) **Braun, H.**—Novocaine: a new anæsthetic. *Deutsche med. Woch.*, Oktober 19, 1905.

(4) **Ohm.**—A contribution to the use of Alypin. (Beitrag zur Verwendung des Alypins.) *Woch. f. Therapie u. Hygiene des Auges*, November 9, 1905.

(5) **Wibo, M.**—Alypin, the new anæsthetic. (L'alypine, nouvel anesthésique.) *Bull. de la Soc. Belge d'Ophtalmologie*, No. 19, 1905.

(6) **Landolt, H.**—Upon Alypin. (Ueber Alypin.) *Woch. f. Ther. u. Hygiene des Auges*, 18 Januar, 1906.

(1) **Barcones** has used stovain, and is prepared to continue its use under certain reservations. Its value is greatest as subcutaneous injection. For instillation, it is somewhat inferior to cocain; it is less toxic than the older drug, and therefore its marked vaso-dilatatory action is not able to cause poisoning, although the great increase of the blood-flow through the part carries off the alkaloid into the general circulation. This vaso-dilatation sometimes brings on a considerable œdema of the lids. HAROLD GRIMSDALE.

(2) **Fernandez** comes to conclusions similar to those reached by Barcones (*see* above).

(3) **Hummelsheim** has compared the action of alypin with that of cocaine upon normal eyes, and finds that as regards anæsthetic effect there is little difference between the two agents. Almost without exception, alypin produces transient vaso-dilatation, which may, however, be avoided by the simultaneous use of adrenaline. Alypin appears to reduce the intraocular tension, a fact that leads the author to suggest its employment in glaucoma. Alypin is also indicated when idiosyncrasy to cocaine exists, and as a local anæsthetic when dilatation of the pupil and interference with accommodation are undesirable. Hummelsheim generally employs a 2% solution of the new anæsthetic, which may be repeatedly sterilised by boiling without suffering deterioration. S. S.

(3A) **Braun**, in the course of a communication dealing with the newer local anæsthetics, describes novocaine, the chloride of p-aminobenzoyldiethyl amino-ethenol, a stable crystalline substance soluble in water. It is a powerful local anæsthetic, but its transient action places it at a disadvantage as compared with cocaine and alypin. The anæsthesia, however, can be prolonged by

adding one of the supra-renal preparations. Solutions of novocaine can be sterilised by boiling, and keep almost indefinitely. MAX P.

(4) **Ohm**, after numerous experiments in Professor Froelich's clinique in Berlin, finds that alypin is an efficient local anæsthetic. He noted moderate dilatation of the pupil after the subconjunctival injection of 2·5 divisions of a Pravaz syringe containing a 20% solution of the new agent (= 0·05 gramme of alypin). S. S.

(5) **Wibo's** experiences with a 5% watery solution of alypin lead him to believe that while its powers as a local anæsthetic equal those of cocaine, it excels the latter in several other respects. Whether dropped into the eye or injected beneath the conjunctiva, the new local anæsthetic never produces unpleasant results. Alypin reduces the intraocular tension, and may be used to replace eserine in the treatment of glaucoma. The solution is perfectly neutral, and may be boiled for ten minutes without undergoing either chemical or physiological changes. S. S.

(6) **H. Landolt** (Strasburg) after pointing out the disadvantages of cocain, *viz.*, mydriasis, paralysis of accommodation, action on the corneal epithelium, toxicity, and its reputed effects on tension, remarks that we are seeking for an anæsthetic which shall possess the advantages without the disadvantages of cocain. Thus we have had eucaine α and β, acoine, holocaine, anæsthesin, yohimbin, &c., presented to us for trial. The newest of these substitutes for cocain is alypin, which Landolt has used in the removal of foreign bodies from the cornea. The strength employed was 4 per cent., with 10 per cent. of 1 : 1,000 adrenalin. The conclusions he has drawn from his comparison of this solution with a 5 per cent. cocain solution are the following:—"Alypin is an anæsthetic which acts, in about equal doses, somewhat less strongly and more slowly than cocain. While the latter has the advantage of at the same time causing anæmia, alypin causes slight hyperæmia. Both drugs have a destructive action on the cornea in certain cases, but it is not yet certain which of the two damages the cornea the oftener. The advantage which alypin has over cocain is that the accommodation and the pupil are not appreciably influenced, and it has the further advantage, apparently, that in glaucomatous eyes the tension is not raised. Hence its employment in glaucoma operations, and in the removal of foreign bodies from the corneæ of patients who must return to their employment at once, and wear no protecting bandage. Alypin is not the anæsthetic which we are seeking for, because it also possesses secondary effects which are undesirable." Landolt also states that in most cases alypin applied to the conjunctiva produces more smarting than cocain. ERNEST THOMSON.

XII.—GENERAL ANÆSTHESIA.

Suker, George F.—Scopolamine and morphine anæsthesia in ophthalmic surgery. *Medicine*, January, 1906.

Suker suggests that general anæsthesia by scopolamine and morphine may prove useful in acute glaucoma and in cataract operations upon restless and nervous patients. After the injections have been made, the patients scarcely ever realise that they have been taken from their beds. Post-operative pain is seldom complained of. Indeed, patients are stated "to enjoy peaceful rest all the way from fifteen to twenty-four hours after the operation." A word as to the *technique* of the method may prove useful to readers.—1/50 gr. of scopolamine hydrobromate (Merck's) and 1/2 gr. of morphine sulphate are dissolved in three drachms of distilled water. One Pravaz syringe of this solution is injected into the arm $2\frac{1}{2}$ hours before operation, a process repeated $1\frac{1}{2}$ hour and again $\frac{1}{2}$ an hour before operation. The patient becomes sleepy soon after the first injection, much more so after the second, while at the moment of the third injection he is scarcely sensitive to pain, although his sense of touch is not obtunded. Complete anæsthesia is usually obtained half an hour after the last injection. Should this not be the case, a minute quantity of ether or chloroform will suffice to maintain narcosis for an almost indefinite time, and that without any preliminary stage of excitement such as occurs under ordinary circumstances. Two injections, according to Suker, will often suffice for eye operations, provided one or two drops of cocaine have been instilled into the eye. Although the patient is apparently comatose, yet he is able to turn the eye in any direction when desired to do so by the operator. The muscular relaxation observed even after a single injection should be advantageous from an ophthalmic point of view.

NOVELTIES.

A DOUBLE SAFETY OPHTHALMIC DROP BOTTLE.

BY

J. BURDON COOPER, M.D., B.S., B.Sc., F.R.C.S.E

BOURNEMOUTH, ENGLAND.

The accompanying woodcut represents a safety sterilizable ophthalmic drop bottle (registered) which has been made for me by Messrs. Down Brothers, of London, the construction of which allows of rapid sterilization without the removal either of the rubber cap from the dropper or of the latter from the bottle.

This bottle is of test tube shape, and has a safety tube fused into the neck, which prevents its contents from escaping. The pipette or dropper is ground to fit the bottle accurately, and is provided with a safety tube (*see* diagram) fused to the aperture of the upper bulb. This safety tube prevents any fluid that has been drawn up into the pipette running back into the rubber nipple when the bottle is laid on its side or the pipette everted. The rubber nipple fitted to the upper bulb of the pipette has near its centre a fine longitudinal slit. It occurred to me to utilise this ingenious device of Bunsen, known as the "Bunsen valve," in order to sterilize the interior of the rubber nipple of ophthalmic drop bottles.

In order to sterilize the bottle, it is held slantwise over the flame of a spirit lamp with the curved end of the pipette directed upwards and the contents boiled. The pressure of the steam drives the fluid into the pipette until the curved end is free, and the steam then passes up through the liquid in the pipette, or into the interior of the rubber cap, sterilizing it, and escaping through the Bunsen valve. The valve prevents the

admission of external air to the bottle after it has cooled, so that at the end of the process of sterilization the bottle is entirely free from air, and the atmospheric pressure prevents the pipette from coming out. The tube can be carried in this condition until its contents are required, when pressure on the top of the rubber cap opens the valve, and the pipette can be removed with ease.

The bottles are made up in sets of nine, and are supplied in the following colours:—Blue—homatropine; green—methyl-atropin; ruby—eserin: amber—silver nitrate; yellow—pilocarpin; purple—atropin; light blue—dionin; light green—fluorescein; flint-glass—cocaine.

The whole set, comprising nine bottles, spirit bottle, and small spirit lamp, is supplied in two leather cases, $3\frac{3}{4}$ inches square, which is easily carried in the pocket. Each case is provided with compartments for five bottles, the selection of which is left to the surgeon, but the most useful is one comprising cocaine, atropin, eserin, silver nitrate, spirit bottle, and lamp.

As most of the fluids used are alkaloids, the bottle is readily cleansed by means of a little strong nitric acid, which forms a

salt easily soluble in water. The deposit occurring in solution of cocaine mixed with adrenalin is difficult to remove, but by allowing the acid to stand for some time in contact with it, with perhaps boiling it occasionally and washing well with water, it is possible to remove the greater part of it.

REVIEWS.

La Surface de Section des Plaies Faites en vue de l'Extraction de la Cataracte et de l'Iridectomie. (Travail de la Clinique ophtalmologique de l'Hôtel Dieu. By Dr. MARC LANDOLT. Paris: G. Steinheil, éditeur. 1905; pp. 130.

In this exhaustive and interesting little monograph, Dr. Marc Landolt gives a full and reasoned account of the various forms of incision by which the globe is opened in the operations named. We all knew that the internal wound differed from the external visible wound, but it is doubtful whether many had a very clear idea to what extent the difference went. After a perusal of this work, such ignorance is no longer permissible.

Dr. Landolt divides his subject into two chief parts: first, a study of the incisions themselves, and, second, a study of their influence on the after-course of the case. The study of the incisions is the most extensive part of the work; they are divided, according to their nature—into "simple," in which the cutting edge works approximately in a single plane, and "complex," in which the flap is cut by incisions in two or more planes. The simple incisions include the linear, following a great circle on the eye, and the flap-forming. By a series of clear and well-arranged diagrams, the author shows how much the inner incision differs from the external in each case. He himself is clearly in favour of a simple flap incision, and in the latter part of the work he shows that the coaptation is better after a section of this kind than after a linear incision. It is certain that the direction of the wound-canal has a great influence on the chance of a prolapse. In the case of a linear wound, the intra-ocular pressure acts, at the greatest possible advantage, to separate the edges. Where there is a flap, the pressure acts at less advantage, and since the surfaces of the canal are larger, the tissues being cut more obliquely, the wound will be held closed more firmly and adhesion of the surfaces will be more rapid. "Anatomical and pathological study seems to show that a section heals better the more extended its surface and the less it encroaches on the cornea; such a section gives also the best optical results."

Dr. Marc Landolt has produced a work of real value and merit on a point which has been allowed to remain somewhat obscure. HAROLD GRIMSDALE.

The Crystalline Lens in Health and Cataract. Address delivered in the University of Oxford, July 10th, 1905. by SIR WILLIAM JOB COLLINS, M.S., M.D., F.R.C.S. London: Adlard & Son, Bartholomew Close; 1905; pp. 20. Price 6d.

After an account of the history and treatment of cataract from earliest times, Collins discussed the morphology and development of the lens, with the various vestigial anomalies resulting from failure thereof. The chemical composition of the healthy lens he estimates at 70% of water and 30% of solids, the percentage of water remaining the same in the child, the adult, and in old age; the percentage in cataractous lenses being 62% of water and 38% of solids, and tending, as a rule, to weigh less than the healthy lens. He finds that the lens is endowed with endless growth, the weight at birth being 120 milligrammes, and at the age of 80, 260 milligrammes, the increased expansion changing the spheroidal-shaped lens at birth into an ellipsoid in the adult. Contrary to the usual teaching, that increasing solidity of the lens accounts for progressive loss of accommodation and presbyopia, Collins attributes it to progressive increase in bulk, and gives a table in support of this view. His theory is that from the increased size of the lens there is less room in the circumlental space for the lens to expand in accommodation. As regards "black cataract," he concludes that the pigment is a product of cell activity like that in the skin, at any rate it differs from blood pigment. Cataracts with myopia and those beginning at the posterior pole are slower in reaching maturity than those which start in the nucleus or anteriorly. Finally, he suggests an ætiological classification of cataracts as the most logical, *e.g.*, (1) Developmental causes, (2) Cachectic, (3) Secondary, (4) Vascular, (5) Nervous causes, and (6) Traumatism. P. A.

CORRESPONDENCE.

While *The Ophthalmoscope* will at all times welcome correspondence from its readers, the Editors do not hold themselves responsible for any views expressed in this column.]

"LID-CLOSURE PUPIL REFLEX."

To the Editors of THE OPHTHALMOSCOPE.

SIRS,

I note that Dr. A. J. Ballantyne in his paper "Two cases of lid-closure pupil reflex" (THE OPHTHALMOSCOPE, February, 1906)

considers the phenomenon to be a true associated movement, and is not in favour of the view that it is due to any mechanical cause. With this I quite agree, and I should only like to point out that a case which I showed to the Ophthalmological Society in October, 1905, suffices to dissipate whatever doubt may be left on that point. It was a patient with ophthalmoplegia interna of specific origin, and in this case contraction of the pupil occurred not only on *forcible* closure of the lids, but even if the patient closed his eyes as gently as possible, as if he was going to sleep. I may add that it was just on account of this exaggeration of a well-known phenomenon that I brought the case before the Society, and that it helped to illustrate my thesis, namely, that a pupil paralysed in one or more senses often responds to another stimulus in an exaggerated manner.

I am, Sirs,

WIMPOLE STREET, W.
Feb. 1st, 1906.

Yours faithfully,
C. MARKUS, M.D.

"COLOURED VISION AFTER CATARACT EXTRACTION."

To the Editors of THE OPHTHALMOSCOPE.

SIRS,

I think an explanation of the cyanopsia after the extraction of cataract may be found in the fact that in ordinary senile cataract there is usually a distinctly yellow or amber colour. For some time, therefore, the patient has seen everything through a yellow medium, and when this is removed objects naturally appear to him as though tinted with the complementary colour—blue. This, at least, is the only explanation which I have ever heard given of a familiar condition. I had not been aware until Major Elliott's paper appeared (THE OPHTHALMOSCOPE, January 1, 1906) that the symptom ever occurred except in senile conditions.

Yours, etc.,

EDINBURGH,
February, 1906.

WILLIAM GEORGE SYM, M.D.

NOTES AND ECHOES.

The Ophthalmoscope

THE present number of THE OPHTHALMOSCOPE is devoted mainly to Cataract. The original articles include those from the pen of such masters of the subject as Sir Anderson Critchett

Lieut.-Col. E. F. Drake-Brockman, Major H. Herbert, Mr. Henry Power, and Mr. C. Devereux Marshall. A glance at the abstracts will show how much important work has lately been accomplished, more especially perhaps in India and on the Continent of Europe. Amongst these articles may be mentioned Major H. Smith's work on extraction of cataract in its capsule, the papers of Mr. E. T. Collins, and of Dr. Hermann Knapp respectively upon the capsular complications of cataract; and last, but assuredly not least, the weighty articles dealing with the causation of cataract, by Drs. Pfister, Peters, Zirm, and others. With such a wealth of observation at hand readers will recognise that the present is a particularly opportune moment for dealing with cataract in its many bearings. It may, perhaps, be added that in the course of the year we purpose to publish a special number of THE OPHTHALMOSCOPE dealing with another practical subject, namely, detachment of the retina.

* * * *

Obituary.

DEATH has been busy in our ranks of late. Dr. Swan M. Burnett died suddenly, of œdema of the lungs and heart failure, at Washington on January 18th, aged 58 years. This distinguished ophthalmologist was born at New Market, Tenn., in 1847, and graduated at Bellevue Medical College in 1870. His numerous appointments included the professorship of ophthalmology in Georgetown University and in the Washington Post-Graduate Dispensary and Emergency Hospital. He was also attached to Providence and the Children's Hospital, Washington. Dr. Burnett published a volume on "Colour Vision" in 1884, and one on "Astigmatism" three years later. His casual contributions to the literature of ophthalmology were both numerous and important. It is interesting to recall the fact that in 1873 he married Mrs. Frances Hodgson Burnett, the talented authoress of "Little Lord Fauntleroy," "A Lady of Quality," "That Lass o' Lowries," and of several other famous books. The death is announced from Paris of Louis de Wecker, aged 83 years. Born at Frankfort-on-the-Main in 1832, Wecker pursued his earlier medical studies at Wurzburg. He afterwards became Desmarres' assistant in Paris, and studied with v. Graefe in Berlin. In 1861 he obtained his Paris degree, and purchased from Deval the well-known clinic in the Rue Visconti. A few years later he attended Léon Gambetta, one of the most interesting statesmen who has ever flitted across the troubled stage of French politics. de Wecker

removed an eye from his distinguished patient. In 1870, de Wecker left the Rue Visconti for the Rue du Cherche-Midi, where he established one of the largest and best-appointed eye clinics in Paris. He continued his devoted services during the darkest days of the siege of Paris, and was nominated surgeon to the national guard. de Wecker's name and fame are known in every part of the world where ophthalmology is practised. He was the author of *Traité des maladies des yeux* (1863), of *Traité des maladies du fond de l'œil* (1870), of *Thérapeutique oculaire* (1878), of *Chirurgie oculaire* (1879), and, finally, in conjunction with Landolt, of that monument of patient research and prolonged labour, the *Traité complet d'ophtalmologie* (1882-1885). He wrote numerous articles in the periodical press, especially upon such subjects as cataract extraction, iridectomy, and jequirity. de Wecker introduced sclerotomy as a cure for glaucoma, and the operation of tattooing as a means of concealing leucomata and of improving sight in cases of the kind. His name will always be associated with his *pince-ciseaux* for the division of after-cataract, and with his double strabismus hook for advancement of the recti tendons. A master of ophthalmology has gone from us. May he rest in peace! The deaths are also announced of William Wallace Gardner, of Springfield, Mass., aged 80 years; of Jerofey Kostenitsch, director of the St. Petersburg Eye Hospital, aged 63 years; of Emil von Wolfring, at the age of 73 years, once professor of ophthalmology in the University of Warsaw; of Friedrich Hosch, professor of ophthalmology at Basle, at the age of 58 years; of Adolph Sachsalber, professor of ophthalmology at Gratz, aged 41 years; of Joseph Delhaise, of Liége, aged 33 years. The last name to be included in our melancholy list is that of Dr. Albéric Rogman, of Ghent, Belgium, a well-known writer on ophthalmological subjects.

* * * *

News Items. His Majesty the King has been graciously pleased to make Sir Anderson Critchett Commander of the Grand Cross of the Royal Victorian Order. Upon Dr. Paul Römer has been bestowed the title and privileges of an extraordinary professor of ophthalmology in the University of Wurzburg. Dr. Hermann Kuhnt has been appointed Rector of the University of Königsberg for the year 1906-1907. Dr. Walter Küsel has succeeded Dr. Herbert Adolph as surgeon to the University Eye Clinic of Königsberg. Dr. A. Agababor has been made professor of ophthalmology in the University of Kasan. Dr. Cange has been nominated professor of clinical ophthalmology in the

medical school of Algiers. Dr. Leopold Heine, privat-docent, has been elected professor of ophthalmology in Breslau. Dr. W. B. Inglis Pollock has been appointed pathologist and bacteriologist to the Glasgow Eye Infirmary.

A movement is on foot, as we gather from *Nature*, to erect a monument to the memory of the late Professor Abbé, of Jena. Subscriptions should be sent to Dr. G. Fischer, of Jena.

Readers will recollect that the Graefe Medal was awarded in August last to Professor Hering, of Leipsig, in recognition of his work in physiological optics. It is now announced that members of Heidelberg Ophthalmological Society may obtain bronze replicas of the medal at a cost of about eight marks on application to Professor Wagenmann, of Jena.

The authorities of the Michigan University Hospital have decided to erect, at a cost of $14,000, a new building for the better housing of patients suffering from affections of the eye, ear, throat, and nose.

The following is the list of officers of the section of ophthalmology of the annual meeting of the British Medical Association to be held in August next at Toronto, Canada :—

OPHTHALMOLOGY.

President: Robert Marcus Gunn, London.

Vice-Presidents: George Herbert Burnham, Toronto; John W. Stirling, Montreal; Joseph Nelson, Belfast; Arnold Lawson, London.

Honorary Secretaries: James M. MacCallum, Toronto; Duncan N. McLennan, 126, Bloor Street W., Toronto; Frank Pearson Skeffington Cresswell, 24, Windsor Place, Cardiff.

* * * *

Awards.

THE Paris Academy of Medicine has recently made two awards of especial interest to ophthalmic surgeons. The first, the Laborie Prize value £200, to Dr. Felix Lagrange, of Bordeaux, for his well-known *Traité des Tumeurs de l'œil, de l'orbit, et des annexes*; the second, the Meynot Prize, value £104, to Dr. Scrini, for his admirable book, *Précis de Thérapeutique Oculaire* (1904). The Königliche Gesellschaft der Wissenschaften has awarded 800 marks to Professor Waldemar Voigt, of Gottingen, for researches on the effect of an electric field on the visual apparatus, and 400 marks to Dr. E. Hertel, of Jena, for his studies on the physiological effects of the chemical light rays.

* * * *

Bowman Lecture, 1907.

A GRACEFUL compliment has been paid to our French *confrères* in asking Dr. Emil Javal, the author of that pathetic human document, "Entre Aveugles," to accept the Bowman Lectureship of the Ophthalmological Society of the United Kingdom for next year. It is to be hoped that Dr. Javal will see his way to accept the proffered distinction. *L'entente cordiale* has clearly extended beyond the ranks of the London County Council into those of the ophthalmological world.

* * * *

The Optician Question.

THE sight-testing optician, or "optologist," to give him the name he hankers after, has at the present moment two parliamentary Bills in evidence, one promoted by the Spectacle Makers Company (the S.M.C.) and the other by the British Optical Association (the B.O.A.). Although differing in detail the principle (or want of it) of these two precious Bills is identical, namely, to legalise sight-testing by medically unqualified practitioners. It is perhaps as well for the medical profession that there is a very pretty little quarrel between the promoters. The British Optical Association object to the control of the trade passing into the hands of the other body, and are accordingly doing all they can to push their own Bill and to oppose that of the Spectacle Makers' Company. *The Optician and Photographic Trades Review*, however, which favours the British Optical Association Bill, goes far beyond its book when it says "the Ophthalmological Society of the United Kingdom does not deem it expedient to oppose the British Optical Association's Bill" (February 2, 1906, p. 570). From this unauthorised statement it goes on to argue that "the opposition of a most important section of the medical profession—*viz.*, the oculists—will not be directed against the British Optical Association's Bill." The journal in question is singularly ill-informed. In point of fact, a sub-committee of the Council of the Ophthalmological Society is now going carefully into the two Bills, and we shall be much mistaken if a strong opposition be not speedily organised by the Society to any proposal to legalise sight-testing on the part of the British Optical Society, the Spectacle Makers, or any other non-medical body. It is to be hoped that the dangerous proposals of these bodies or corporations may never find their way into the British statute book. If these greedy and aggressive trade interests should by any misfortune secure the protection of Parliament, future generations will most certainly be called upon one day to send back spectacle

makers to spectacle making, and to restore the care of the sight to medical men. We need concerted and determined action to put an end to these encroachments, alike dangerous to the public and damaging to the profession. Why does not the General Medical Council interfere? If sight-testing by laymen does not concern the Council, let us have a Council on a fresh basis, empowered to look after professional interests.

* * * *

Dangers of Medical Practice.

THREE recent cases emphasise the danger now and then incurred by ophthalmic surgeons in the performance of operations. The first case concerns an American, Dr. George F. Suker, of Chicago, who was sued by a certain Abraham Bernstein on the ground that this gentlemen of Jewish patronymic had been blinded as the result of an operation. The damages were laid at $10,000. The court found that there was no case against Dr. Suker, who had treated the man gratuitously for two years. It was indeed proved that Dr. Suker's treatment had resulted in some improvement in the plaintiff's sight! Could ingratitude go farther? The second action was brought in the Whitechapel County Court against our own countryman, Mr. R. Marcus Gunn, by a blind man, "very tall and gaunt and grim," to quote the words of the newspaper report of the proceedings. The plaintiff, who had passed under the various *aliases* of "Aaron Goldenfeld," "Schleifestein," and "Aaron Collins," alleged that his sight had been destroyed by Mr. Gunn's negligence. Two operations had been performed at Moorfields Hospital for high myopia. The alien of many names was non-suited, and Mr. Gunn, very generously as it seems to us, declined to ask for costs. A third case, reported in a recent number of the *Wochenschrift für Therapie und Hygiene des Auges*, did not end so happily for the ophthalmic surgeon. The facts follow:—A servant maid sued Dr. V. F., oculist, for compensation on the ground that she had been disfigured and her sight injured by an unsuccessful operation. 10,000 kr. were demanded as compensation. She further claimed a monthly pension of 80 kr. and the return of the fee paid for operation, 216 kr. In support of these claims, the plaintiff pleaded that she was a minor and that the consent of her parents had not been obtained and also that she had not been made aware of the possible results of surgical interference. The case went against the surgeon, who was ordered to pay the girl 5 kr. per month for life, 500 kr. compensation, and to refund the operation fee. On appeal, a higher Court decided that the monthly payments should extend over five years only. The

President, in giving judgment, said that the medical man was at fault, inasmuch as he had undertaken an unnecessary operation without obtaining the patient's consent and without acquainting her with the possible results. These three cases emphasise the somewhat obvious fact that all ophthalmic surgeons should join a Medical Defence Union. The third case suggests an extension of the functions of that and similar protection bodies. They might organize a guarantee fund on much the same lines as those adopted by commercial corporations. By payment of a small percentage yearly any surgeon could then have at his call a given sum to be expended in the payment of costs or damages incurred in actions at law of the kind touched upon above.

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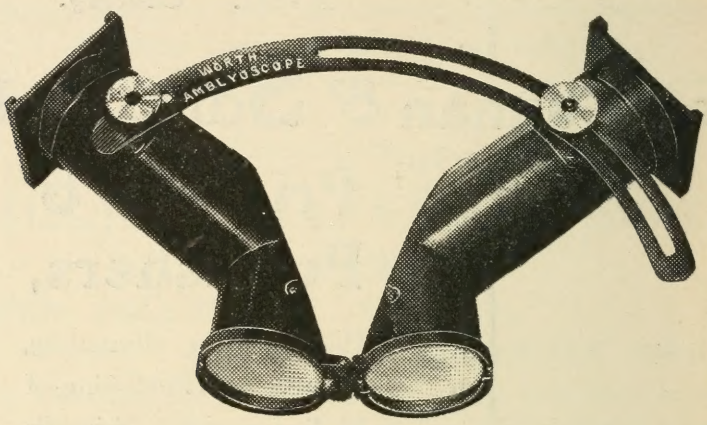

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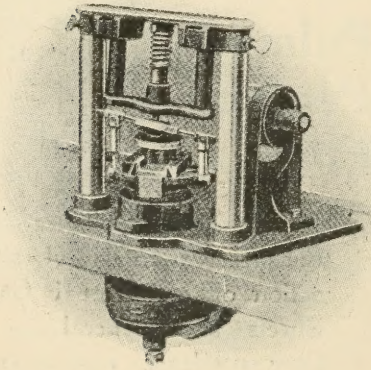

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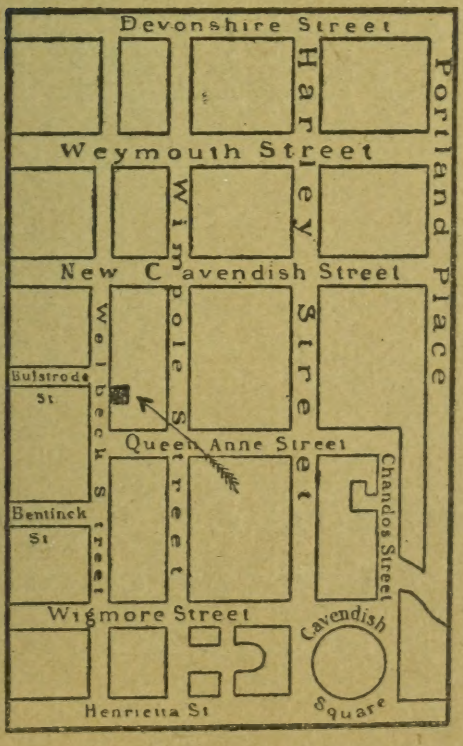

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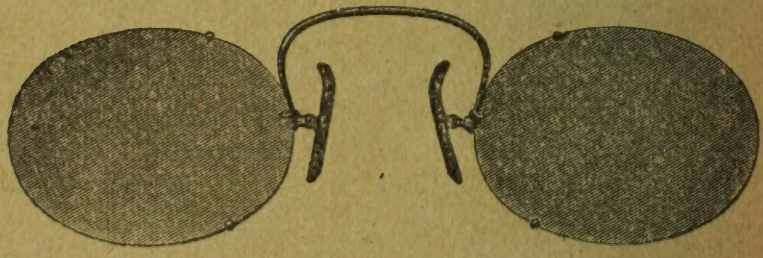

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